ABSTRACT

Title of Dissertation: IEP DEVELOPMENT AS A FUNCTION OF PEDAGOGICAL EXPERIENCE IN SPECIAL EDUCATION TEACHERS

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The overarching goal of this study was to examine performance during development of the individualized educational plan (IEP) for students with disabilities as a function of pedagogical experience among special education teachers. Qualitative methods were used to describe how special education teachers, categorized as more experienced and less experienced, differed in developing goals and objectives and how their differences aligned with the stages of expertise development proposed in the Model of Domain Learning. Specifically, three more and three less experienced special education teachers who serviced students with disabilities in resource room settings, participated in a one-hour verbal protocol procedure while engaging in the explicit task of developing an IEP for a simulated student profile.

Data sources included questionnaires, direct observations and recordings of participant verbalizations during the task of IEP development, follow up interviews, and permanent products. Data codes were based on the preliminary findings from a pilot study and heavily informed by existing literature related to expertise development, pedagogical knowledge of special educators, and IEP development.

Findings highlighted specific differences in the demonstrated knowledge and strategic processing of the participants across experience levels. The demonstrated

foundational knowledge and use of surface level strategic processing by the less experienced special education teachers was consistent with learner behaviors described in the acclimation stage of development in the Model of Domain Learning. The more experienced participants exhibited early, middle, and late characterizations consistent with the competency stage of development.

There were marked similarities between the written IEP goal and objectives between the less experienced participants and two of the more experienced participants. Several issues emerged as possible factors for these similarities: a) training on goal development, b) problematic implementation of IEP development strategies, and c) participant perceptions of the significance of the IEP goals and objectives.

Specifically, the following conclusions were drawn: a) developing IEP goals and objectives that are instructionally relevant and technically adequate continues to be problematic, b) there is not a consistent direct relationship between years of experience and the procedural integrity of the developed IEP goals and objectives, and c) interventions based on models of development that offer a well conceptualized understanding of how domain expertise emerges and provides a full description of expected behaviors across a trajectory of development would be beneficial to both preservice and inservice special education teachers.

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By

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CHAPTER I

INTRODUCTION

Over the past 30 years, the original federal law governing special education has undergone numerous reauthorizations and revisions. During its most recent reauthorization in 2004, the law became PL 108-446, the Individuals with Disabilities Education Improvement Act, also known as IDEA. In 1997 and again in 2004, provisions were added strengthening the right of students with disabilities to a free appropriate public education and providing greater accountability for those students (Nolet & McLaughlin, 2005). The language of the IDEA 2004 calls for an increased focus on the educational performance of students with disabilities and how that performance aligns with national standards of accountability (Skrtic, 2005). The resulting changes to the IEP provisions of the law clearly convey lawmakers' expectations that special education instruction be anchored in the general education curriculum, to the maximum extent possible.

The most specific mandates of the law have been those that referred to the provisions of the IEP (Larsen & Poplin, 1980; Tymitz-Wolf, 1982). Under IDEA 2004, the IEP provisions include: a statement of the child's present level of academic achievement and functional performance; measurable annual goals; a statement of how progress toward annual goals will be measured; a statement of identified special education and related services, supplementary aids and services; an explanation of the extent to which the child will not participate in general education classes; a statement of any individually appropriate accommodations; and measurable postsecondary goals beginning at the age of 16 or after.

Traditionally, the model most often used in IEP development involved conducting assessments on discrete skill deficits, identifying student strengths and areas of need, and developing remedial annual goals and objectives (Larsen & Poplin, 1980; Nolet & McLaughlin, 2005; Tymitz-Wolf, 1982). This type of instructional planning resulted in IEPs that were often perceived as a collection of isolated skills that led to inconsistent instructional interventions (Shriner & DeStefano, 2003) with little or no relevance to the general education curriculum.

The nature of IEP goal-setting has been found to have a direct association with the integrity of services received by students with disabilities (Shriner & DeStefano, 2003). The implications of this link led professionals in the field to question the validity and accuracy of the IEP (Keefe, 1992). Studies conducted to examine characteristics of IEP goals indicated that goals and objectives for specific categories of students often lacked clarity, depth, and relevance to individual needs (Shriner & DeStefano, 2003). For example, in comparing the IEPs of students with behavior disorders and learning disabilities, Smith (1990a) identified differences in the number of annual goals and short-term objectives, and the degree of connectedness between those goals and performance data.

Similarly, Epstein, Patten, Polloway, and Foley (1992) and Reiher (1992) reported a lack of congruency in the goals and objectives reviewed during their studies. In a large scale study, which involved nine states, Giangreco, Dennis, Edelman, and Cloninger (1994) looked at the IEPs of students with multiple disabilities and concluded that most of the IEP goals were broad, inconsistently implemented, and written to reflect behavioral changes in others as opposed to change on the part of the student. Lynch and Beare

(1990) furthered the analysis of IEP goals and actual classroom implementation. Their findings indicated a low correlation between goals and actual delivery of instruction.

Collectively, conclusions drawn from prior research on the efficacy of IEP goals and objectives strongly support the contention that, in the absence of linkage to the general education curriculum, IEPs are not "reasonably calculated to enable the child to receive educational benefit," therefore rendering them legally incorrect and educationally insufficient (Bateman, 1992, p. 18). Coupled with the present system of standards based reform, a policy shift in present day special education occurred. Foreshadowed by legislation such as the 2001 version of the Elementary and Secondary Education Act (ESEA), commonly known as No Child Left Behind, IDEA 2004 necessitates that IEP development evolve beyond procedural compliance to ensure standards based accountability (Nolet & McLaughlin, 2005).

Instructional Planning in the IEP

At the core of IEP development is the task of instructional planning, which results in written annual goals and short-term objectives in a student's individualized education program. IDEA 2004 amendments removed the requirement that IEPs state objectives or benchmarks, with the exception of students who will be held to alternative achievement standards; the intent was to reduce paperwork associated with the IEP and narrow the path towards alignment with state standards (Nolet & McLaughlin, 2005). Removal of this component in no way suggested a devaluing of objective writing as a requisite skill in the repertoire of special education teachers. Research supports the use of objectives as an effective way to determine student progress (Codding, Skowron, & Pace, 2005). Subsequently, the task of instructional planning with regard to writing annual goals and

short-term objectives is one of ten standards of high-quality special educators developed by the Council of Exceptional Children (CEC) and has been described as the center of special education practice (CEC, 2003).

Instructional objectives and benchmarks describe expected student performance in measurable terms and facilitate monitoring of student progress toward an annual goal throughout the academic year (Drasgow, Yell, & Robinson, 2001). Objectives are beneficial in that they communicate valuable information to parents, students and teachers concerning the specifics of what should be taught (Nolet & McLaughlin 2005). Usually, the task of writing goals and objectives is delegated to special education teachers (Goldstein, Strickland, Turnbull, & Curry, 1980). However, an important finding for a number of the early IEP development studies was that teachers had concerns about their skills in developing objectives (Tymitz-Wolf, 1982). This was further substantiated by Rodger (1995) who conducted a review of available literature and concluded that substantive weaknesses in the IEP could be attributed to the fact that methods of training teachers have met with varying success and teachers are often not observed using the skills on which they have been trained. Further, Rodger (1995) noted that the development of IEP goals and objectives is a multi-component process that entails a range of complex tasks, from interpreting assessment data to understanding the hierarchical and sequential relation between objectives.

Given the reauthorization of IDEA and mandated changes to the focus of the IEP of students with disabilities, examination of factors related to instructional planning by special educators would prove beneficial in providing implications for teacher development in the field. While there is an apparent assumption that the expertise of

special education teachers would have a direct impact on their ability to plan effective instruction for students with disabilities, there has been minimal research investigating this relationship (Stough, 2001). Still in its infancy, this line of research has provided insight into the skills and abilities characteristic of expert special education teachers (Alexander, Sperl, Buehl, Fives, & Chiu, 2004; Bartelheim & Evans, 1993; Billingsley, & Tomchin, 1992; Blanton, Blanton, & Cross, 1994; Marlatt, 2004; Stough, 2000, 2001; Stough & Palmer, 1996). However, there has been limited focus on identification of skills within various stages of expertise development (Alexander et al., 2004). Understanding how to develop expertise in special educators is crucial to the preparation of a workforce able to meet the demands of the field (Billingsley, 2004).

Meeting the mandated requirements of IDEA 2004 and reaching accountability standards set forth by NCLB 2001 require a systemic change within the field. Providing access to the general education curriculum will necessitate changes to special education instruction in addition to the IEP as both a process and a product. This means that special education teachers must demonstrate an integrated understanding of general education curriculum standards, knowledge of subject, content, and strategies for designing individually specialized instruction (Massanari, 2002; Nolet & McLaughlin, 2005). For many teachers, it will be necessary for them to gain in depth knowledge of the general education curriculum as well as to redefine how they develop IEP goals and objectives (Massanari, 2002).

The Model of Domain Learning

The existing gap between the law and the actual development of the IEP has been addressed in numerous ways. From a historical perspective, databased research reports

and position papers related to the IEP have spanned a continuum of inquiry starting with a period of prescribing concepts and provisions, moving on to highlighting perceptions, and concluding with the effectiveness of computer-assisted systems in managing the IEP documentation (Smith, 1990b).

In the last decade, research efforts have moved past defining critical areas of concern and focused more on validating specific strategies that assist in the development of quality IEP goals and objectives (Pretti-Frontczak & Bricker, 2000). However, evidence suggests that the identification of these strategies has not translated easily into practice (Alexander et al., 2004). Even with all the gains special education teacher preparation programs have made, beginning and inservice special educators continue to struggle with how to apply what they have learned (Billingsley, 2004; Mastropieri, 2001, Rosenberg, 1996; Whitaker, 2000). Alexander and her colleagues (2004) contended that, if induction programming is to be effective in the advancement of new inductees towards competence in the facets of special education, there needs to be a well conceptualized understanding of how expertise emerges and a full description of expert behaviors during domain specific tasks.

The Model of Domain Learning or MDL (Alexander, 1997) offers such a developmental conception of expertise. The MDL considers the interrelations of knowledge, interest, and strategic processing across three progressive stages: acclimation, competency, and proficiency or expertise (Alexander, 2004). Associations between these factors of expertise development are represented by distinct characteristics at each stage. The interactions between the three factors become the mechanism by which the individual is propelled forward into the next stage of development (Alexander, 2003b).

The goal of the model is to improve learning and development, and it is applicable across domain-specific tasks (Alexander, 2003a). Pedagogical experience level has been found to be a factor in the quality of instruction for students with disabilities (Brownell, Sindelar, Bishop, Langley, & Seo, 2002; Darling-Hammond, 1999).

Purpose of the Present Study

The purpose of this study was to describe the instructional planning strategies and techniques used by special education teachers, who vary in level of teaching experience, during the task of developing IEP goals and objectives. Guided by the MDL model of expertise development, particular consideration was given to the underlying knowledge base and strategic processes used during IEP development as markers of progression through the stages of the model.

Guiding Research Questions

Framed by the literature review presented in Chapter Two, initial research questions are proposed to guide the description of how novice and expert special education teachers develop IEP goals and objectives for students with disabilities.

1) In what ways will less experienced and more experienced special education teachers differ in the forms of knowledge that they demonstrate, and the types of strategic processing used, during the task of developing IEP goals and objectives?
2) In what ways will the written IEP goals and objectives developed by less experienced and more experienced special education teachers differ in the degree to which they have:
    a. Technical adequacy (antecedent, behavior, and criteria)?

b. Congruency (connectedness between the present level of student performance or PLOP, goals and objectives)?
c. Instructional relevance (scope is appropriate, objectives are written in hierarchical and sequential order)?
d. Curriculum alignment (accesses general education curriculum outcomes)?

3) In what ways do less experienced and more experienced special educators differ in their levels of interest and professional involvement in the field of special education?
4) In what ways will the demonstrated knowledge states and strategic processes of more experienced and less experienced special education teachers engaging in the domain specific problem-solving task of IEP development align with the stages of expertise development predicted by the Model of Domain Learning?

Definition of Terms

Terms used in this study are defined operationally here. Researchers investigating expertise and special education often use terms interchangeably. Given the methodological limitations of operational definitions in both lines of research, clarification will aid in understanding the context and constructs of the proposed investigation.

Expertise. Multiple designations of the term expertise can be found throughout the existing body of literature (Alexander 1992, Alexander & Judy, 1988; Palmer, Stough, Burdenski, & Gonzales, 2005). In order to capture the variation of the construct in this review, expertise is defined operationally as any display of outstanding performance or knowledge derived from training or experience in a given domain.

IEP development. IEP development is a term that has a dual meaning. In the special education literature, it refers to a process of problem solving and making decisions concerning the individualized education program for a particular student with a disability (Dragslow et al., 2001; Goodman & Bond, 1993). In research studies investigating IEP quality, IEP development refers to a final permanent product that addresses in writing specific aspects of a child's individualized education plan (Kamens, 2004; Smith, 1990b). For the purposes of this study, IEP development will refer to the specific task of writing an annual goal and short-term objectives in an instructional content area that is appropriate for a simulated profile of a student with a disability.

More experienced special educators. The accurate identification of a teacher in terms of experience or expertise is crucial to studies of pedagogy (Palmer et al., 2005). Researchers have recommended using a two-gate identification process that clarifies screening markers such as years of experience and performance indicators that could be gathered through a confirmatory-nomination process (Palmer et al., 2005). Initial plans for the present study included a nomination process. However, the local education agency in which the participants are employed would not agree to any type of confirmation or nomination process. Therefore, the category of more experienced special education teachers will be defined operationally as teachers who a) have 10 years or more of teaching experience at the elementary level instructing students identified as having a disability in a resource room setting and b) hold a state professional certification in special education.

Less experienced special educators. The category of less experienced special education teachers is defined operationally as teachers who have a) one to two years of

teaching experience with elementary level special education students identified as learning disabled in a resource room setting and b) hold a state provisional or professional certification in special education.

Resource. Resource is defined operationally as a special education placement provided to students in kindergarten to grade 12 who have been identified as meeting eligibility criteria under the Individual with Disabilities Education Act (IDEA). Students who receive services in a resource placement typically demonstrate learning or behavioral needs that affect performance in one or more academic areas. Resource services can be provided as direct daily instruction or on a consultation basis and the hours of service range from 1 to 10 hours of instruction per week. A variety of instructional models and strategies may be used to meet individual student needs. These include, but are not limited to, pull out programs where students are taken out of a general education setting and instructed according to the IEP in a classroom with a resource teacher; plug in programs where a resource teacher goes into a general education setting to provide instruction according to the IEP; or as collaborative consultation between the resource teacher and general education teacher who implement instruction according to the IEP and track student progress.

This discussion of the IEP, instructional planning and pedagogical development provides a rationale for the present study. In addition to the well-documented problematic nature of the IEP (Smith, 1990b), the emergence of standards based reform into special education accountability systems sets the premise for descriptive studies of this phenomenon. This study developed from a need to describe the knowledge and strategies used during the task of writing IEP goals and objectives by special education teachers at

varying levels of pedagogical experience and to stimulate and advance the discussion of how to promote the pedagogical development of special educators.

Chapter Two will present a review of literature and research that: a) provides a historical overview of expertise studies; b) gives insight into what has been learned about pedagogical expertise from a broad literature base; c) summarizes characterizations of special education teacher expertise; and d) describes identified areas of weakness in IEP development.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study is to describe the task of developing an individualized educational plan (IEP) for students with disabilities as a function of pedagogical experience. This chapter includes a comprehensive integration of literature and research relevant to the constructs investigated in this study. The purpose of this chapter is to a) provide a historical overview of expertise research b) examine prior research that identifies differences between novice and expert teachers in general and special educators in particular, as well as c) review studies that investigate the specific task of developing the written Individual Education Plan (IEP) for students with disabilities.

The expertise literature is extensive. Therefore, in framing this discussion, I selected studies that exemplified characteristics of precontemporary conceptualizations of outstanding performance across generations of expertise studies. A substantive description of the first, second, and third generations of expertise research highlights the contributions of each and demonstrates their value in the progression toward a comprehensive understanding of expertise. An exhaustive review of literature that represents tenets of contemporary research on expertise was conducted according to domain-general, domain-specific and task specific characteristics of pedagogical expertise.

Prior to conducting a review of the literature, guidelines were established to direct the search criteria. First, a decision was made to use any descriptive papers or research reviews as a means of identifying relevant studies and to clarify any interpretations of empirical research findings (Alexander & Judy, 1988). Second, because of the vast

amount of literature on expertise, any relevant studies conducted between a) 1900 thru 1960's would represent characteristics of a first generation of expertise studies, b) 1970 thru 1980's would represent characteristics of a second generation, and c) 1990's to present would exemplify a contemporary third generation of expertise research (Holyoak, 1991). Finally, because the definition of expertise has been noted as a methodological concern for this line of research (Alexander, 1992; Alexander & Judy, 1988; Palmer et al., 2005), review of empirical studies was limited to only the ones where some form of an operational definition of expertise as a construct was given.

Multiple designations of the term expertise can be found throughout the existing body of literature (Alexander 1992, Alexander & Judy, 1988; Palmer et al., 2005). In order to capture the variation of the construct in this review, expertise is defined operationally as any display of outstanding performance or knowledge derived from training or experience in a given domain.

Research reviewed for the current study resulted from a comprehensive literature search. The search was conducted utilizing a computerized search of the Educational Resources Information Center (ERIC), Psyclit, PsycINFO, and Ebsco databases for relevant publications between the years 1980 to 2006. Major descriptors used in this search were expert/novice, cognition, problem solving, special educators, expertise, individual education plan (IEP) development, instructional planning, and IEP content analysis.

Additionally, hand-searches were done on several journals with publication dates from 1985 to 2006. Among the reviewed journals were: *Teacher Education and Special Education, Teaching Exceptional Children, Journal of Special Education, Learning*

Disabilities Research and Practice, Exceptional Children, Educational Psychologist, Educational Researcher, Journal of Educational Psychology, and the *Journal of Teacher Education*. In addition to an ancestral search, references from related lines of inquiry and reviews were used to locate potentially appropriate research studies.

Review of empirical studies included an examination for standards inherent to the specific methodology used in that line of research. Evaluation criteria focused on analyzing issues related to operational definitions of constructs, general design, and instrumentation (Isaac & Michael, 1997).

The literature reviewed in this chapter generates a discourse that a) provides insight into the identified characteristics of expertise that seem primary in facilitating IEP development, b) highlights methodological issues that are representative of expertise research and point to lacunae in the current literature base, and c) evaluates the implications of the current knowledge base on expertise in building a theoretical framework for the present study of the development of individual education plans (IEP) as a function of experience in special education teachers.

The Nature of Expertise

Investigations of human expertise have resulted in an extensive literature on the nature of expertise. Their origins are grounded in the field of cognitive psychology (Chi, Glaser, & Farr, 1988) and framed by the development of models and theories such as artificial intelligence (AI) and information processing theory (IPT), (Alexander, 2003b). However, the science of individual differences evolved in the late 19th century and Sir Francis Galton (1822-1911) is credited with the development of this line of inquiry (Alexander, 2006). Galton's explorations of human differences initially focused on

discovering factors fundamental to human intelligence by studying lineage data on prominent individuals (Alexander, 2006). Galton also was influential in constructing the concept of the normal distribution, which has been pivotal in developing theories and research on human differences (Alexander, 2006).

Researchers investigating the study of expertise have sought to understand and account for what distinguishes between outstanding and less outstanding individual performances in a given domain (Ericsson & Smith, 1991). Research on expertise, which spans more than 30 years of scientific inquiry (Holyoak, 1991), has been described as generational (Alexander, 2003b; Holyoak, 1991). Within its generations, expertise research is earmarked by distinctly different characteristics. Holyoak (1991) contended that theories of expertise had cycled through two generations, demonstrating the need for a collective body of expertise research that would be representative of a third generation.

First Generation: Knowledge Lean Research

During the infancy of expertise research, numerous approaches were considered to explain outstanding performances. These first generation approaches often investigated constructs that were knowledge lean and general (Alexander, 2003b; Ericsson & Smith, 1991), which means that all information needed to solve the problem was given and no additional knowledge was necessary. One such approach was scientific research on general inherited characteristics. Based on the proleptical work of Sir Francis Galton, researchers investigating general inherited characteristics sought to discover differences in general ability and basic characteristics of mental processes, like processing speed, memory ability and general intelligence (Baron, 1978; Carroll, 1978; Cooper & Regan, 1982; Hunt, 1980).

In a review of early expertise studies, however, Ericsson and Smith (1991) contended that analyses from these studies indicated low correlations between performances and indices of ability resulting in inconclusive accounts for individual differences. Ericsson and Smith (1991) also pointed out that those methodological issues also confounded efforts of accounting for outstanding performances in terms of inherited characteristics. For example, Cooper and Regan (1982, p.163) noted that inadequacies in operational definitions and flaws in the designs of both cognitive tasks and intelligence measures made interpretation of correlation between constructs difficult and hindered replication. The research approach of accounting for outstanding performance in terms of inherited characteristics was largely unsuccessful in identifying strong and replicable correlations.

A prolific line of inquiry in expertise research focused on heuristic search methods in problem solving (Holyoak, 1991). These methods allowed for investigations across domains without the prerequisite of domain-specific knowledge (Alexander, 2003b; Holyoak, 1991). Specifically, the tasks that served as experimental stimuli in these studies were developed under the assumption that all the information needed to answer them was provided in the problem statement, deeming them knowledge lean (Alexander, 2004).

In their early works, Newell and Simon (1972), for example, approached problem solving in terms of search skills. Their research yielded a small number of methods for serial searches, such as means-end analysis, which were performance general and knowledge lean (Alexander, 2003a; Holyoak, 1991). Results indicated that heuristic search methods were characteristic of expertise. These methods also impacted the first

studies on artificial intelligence (Holyoak, 1991). However, subsequent studies in chess (Chase & Simon, 1973; de Groot, 1946/1978) and other domains such as physics (Holyoak, 1991) demonstrated the significance of specific domain knowledge, rendering heuristic search methods insufficient in explaining expertise problem solving.

Although scientific research on general inherited characteristics and heuristic search methods differed, both are indicative of general but weak characteristics of outstanding performance that, in the absence of domain specific knowledge, failed to explain adequately existing individual differences. Ericsson and Smith (1991) maintained that the failure of these early approaches to yield conclusive results is due to researchers attempting to measure independently the hypothesized sources of the outstanding performances.

Second Generation: Knowledge Rich Research

In contrast to the first generation of expertise research, complex problem solving, procedural learning, and domain specific knowledge characterized second-generation studies (Holyoak, 1991). Integration of these components proved foundational in the development of several notable theories of expertise, including Anderson's (1983) theory of knowledge compilation, Chase and Simon's (1973) theory of chunking, and the human-information processing theory developed by Newell and Simon (1972). The premise underlying the development of expertise in second-generation research was identification of character traits representative of outstanding performance by isolated comparisons between experts and novices (Alexander, 2003a). If the knowledge and strategies used by an expert within a particular domain could be identified and then compared to knowledge and strategies used by a novice, then one would know what to

teach a novice so that that individual could become an expert. Out of the emphasis on the comparison of experts to novices, second-generation studies were referred to as expert-novice research.

The inability of first generation theories of expertise to account adequately for outstanding performance with approaches that focused on inherited characteristics and heuristic searches led researchers to consider specific acquired characteristics (Ericsson & Smith, 1991). Emphasis on the acquisition of outstanding performance prompted the identification of what the acquired characteristics were and the process by which they were acquired (Ericsson & Smith, 1991). The original expertise approach was one of the first fruits of second-generation research. The expertise approach offered careful analysis of the attained performance itself (Ericsson & Smith, 1991). Although there is no general consensus on the definition of the expertise approach (Chi, Glaser, & Farr, 1988; Genberg, 1992; Ericsson & Smith, 1991), the initial applications of the expertise approach in the pioneering work on chess expertise (Chase & Simon, 1973; deGroot, 1946/1965) offered three defining characteristics. According to Ericsson and Simon (1991), the expertise approach required development of standardized tasks by which the outstanding performance could be clearly exhibited and reliably replicated in the laboratory under relatively standardized conditions. Also, it required an analysis and description of the cognitive process inherent in the production of the outstanding performance on the developed tasks. Finally, analysis of the identified cognitive processes facilitated the identification of learning mechanisms that accounted for the acquisition of the processes.

Because these features of the expertise approach limited its application, preference of study often was given to domains that had accepted measures of performance (Berliner, 1991; Ericsson & Smith, 1991). Chess playing was one such domain that lent itself to easily identifiable standardized tasks that could be reproduced in a laboratory setting. Researcher de Groot (1946/1978) proposed to capture chess expertise by having chess players select "best next moves" for different chess positions. He collected think aloud protocols from the players as they selected the moves for several chess positions. The pioneering use of verbal protocol analysis allowed him to frame differences in cognitive processes between the players at various levels of expertise. According to de Groot (1978), the superior chess playing ability of more experienced chess players was related to their extensive experience, which allowed for systematic retrieval of chess position characteristics, methods, and appropriate moves. The chess masters described this retrieval as integration of the characteristics, methods, and moves as a whole, whereas the retrieval ability of less experienced players was singular in nature.

Chase and Simon (1973) conducted a study to investigate the memory performance of chess masters. A standardized memory task was used to measure the subjects' ability to recall the locations of as many chess pieces as possible. The results supported de Groot's (1946/1978) earlier findings, which demonstrated that the recall process had a similar structure to the process of selecting best next moves. Chase and Simon (1973) argued that chess masters recognized configurations of chess pieces they described as chunks. Moreover, they contended that the more experience or practice a player had developed crucially affected the storage and retrieval of superior chess moves,

as reflected in the superior memory performance of chess masters. Thus de Groot's (1946/1978) description of an integrated retrieval of information, coupled with Chase and Simon's (1973) discovery of "chunks" in the formation of patterns by experts, laid a foundation for varying perspectives on expertise.

The information-processing model was also a by-product of this generation (Holyoak, 1991; Kahney, 1986). Simon (1978) discussed the information-processing model (IPT) as an emphasis on a linear process of a conscious application of knowledge. This linear processing allowed for going from a representation of a problem to searching for a solution. The underlying assumption for this theory was that human cognition has a problem solving organization that facilitates goal achievement (Genberg, 1992). Research based on the information-processing model has generated empirical evidence that suggests distinctions between experts and novices are attributable to differences in the organization of their respective knowledge bases (Simon, 1978).

Collectively, second-generation research on expertise has provided a considerable body of empirical evidence documenting identified differences between experts and novices in strategic knowledge, performance, and problem-solving skills across diverse domains (Alexander, 1992, 2003a; Glaser & Chi, 1988; Holyoak, 1991; Rikers & Paas, 2005). Glaser and Chi (1988) provided an overview that examined key characteristics of expert performances identified in second-generation studies. In one of the most widely cited reviews (Chi, Glaser, & Farr, 1988) in the existing literature base on expertise (Holyoak, 1991), the authors offered a compilation of commonalities across various domains showing that: a) experts have an extensive and integrated body of domain knowledge; b) experts exhibit superior short-term and long-term memories; c) experts

perform complex tasks in their given domains more accurately; d) experts are more effective in selecting appropriate solution strategies for domain-specific problem solving and identifying underlying problem structures; and e) experts have better pattern recognition, which allows for retrieval of content knowledge with minimal cognitive effort (Alexander, 2004; Glaser & Chi, 1988; Ericsson & Smith, 1991; Holyoak, 1991).

These findings have generally been described as consistent and robust (Alexander, 2004; Ericsson & Smith, 1991; Glaser & Chi, 1988; Holyoak, 1991). However, Holyoak (1991) suggested that the consistency may be in part a result of the emphasis on well-structured domains and clearly defined tasks that have been traditionally investigated in expert-novice research. There has been some evidence indicating less consistent results when expertise was examined in ill-structured domains (Alexander, 1992; Voss & Post, 1988). The field of pedagogy presents a good example. Rich (1993) investigated the role of stability and change in pedagogical expertise. He hypothesized that once teachers were characterized as experts, it would be unlikely that they would lose that category. This hypothesis was based on the assumption that teachers would carry their expertise with them across all educational settings unaffected by internal and external environmental conditions common to pedagogy.

Analyses on Rich's (1993) data from nine participating teachers (6 experts, 3 non-experts) identified four types of participating teachers who varied on stability and change. One of the six teachers who were experts before implementing the curriculum continued to demonstrate pedagogical expertise on the performance task. Rich referred to this participant as a temporary novice. The next group included the three participating non-expert teachers whose lack of skill extended throughout the implementation of the

strategy. The third type included three teachers who had been categorized as experts, but functioned as novices through the implementation phase, and were reportedly showing strong indications of becoming experts again. The final group consisted of two expert teachers who exhibited characteristics of novices on the performance task without any indication of performing again as experts.

Arguably, the Rich (1993) study complicates the notion that experts excel mainly in specific curricula or strategies. In his conclusion, Rich (1993) surmised that findings from his study did not negate the results from previous studies. Rather, they solidified the existence of within group differences. The contradiction between generally accepted characteristics of expert performance and the findings generated by this study is what Holyoak (1991) described as one of many empirical inconsistencies and theoretical anomalies of second-generation expertise research.

Limitations of First and Second Generation Research

Clearly, prior generations of expertise research have provided a rudimentary range of capacities and associated characteristics of expert performance (Ericsson & Smith, 1991). Despite significant gains in facilitating a general understanding of expertise, first and second-generation theories of expertise failed to provide a universal characterization of expert performance (Alexander, 2004; Holyoak, 1991). Several limitations of early expertise research have been identified in the literature base (Alexander, 2003b; Alexander & Judy, 1988; Holyoak, 1991). Specifically, two of these limitations are discussed, as they represent critical components in the theoretical framework for the present study of pedagogical expertise.

Focus on Well-Structuredness

Research on expertise in well-structured domains represented by highly specific problem solving tasks has been chronicled thoroughly. Highly selective problem-solving tasks were favored for their perceptual demands and procedural characteristics (Alexander, 2004; Holyoak, 1991) that facilitated easy identification of correct and incorrect subject responses. Hofstadter (as cited in Alexander, 2004) explained the difficulty in distinguishing expertise when investigating variables that have no explicit path of solution. He noted that the absence of a clear delineation between right and wrong responses occurred when the performance criteria involved the integration of "real-world" knowledge or "common sense." The construct of problem solving in and of itself alluded to real world application and ecological validity. However, in addition to highlighting less conclusive results in studies of more ill-structured domains, Alexander (2004) pointed out that these purposefully chosen tasks of 1st and 2nd generation studies were more often executed under true experimental conditions rather than in realistic situations, making transfer to dynamic settings difficult (Ericsson & Smith, 1991).

Use of Dichotomous Categories

Closely akin to the focus on well-structured domains was the assignment of dichotomous categories in early expertise research. Comparison and contrast were central methodological determinates of expertise performance during the infancy of expertise research (Alexander, 2004; Chi et al., 1988; Ericsson & Smith, 1991; Genberg, 1992). The presence or absence of a cognitive skill categorized one's performance as either expert or novice, casting what Alexander (2003b) describes as a "dichotomous veil" on the study of expertise. While this approach was adequate in establishing an outstanding

task performance (Ericsson & Smith, 1991), it hindered identification of the processes involved in becoming an expert (Alexander, 2003a; Holyoak, 1991). As the study of expertise has ventured into less well-structured domains, such as pedagogical expertise, the application of early theories of expertise based on this "either/or" approach proved problematic (Alexander, 1992). The use of this methodological approach did not allow for a clear understanding of the processes involved in the transformation from novice to expertise (Alexander, 2003a).

In conclusion, the combination of domain-specific knowledge and heuristic search methods offered by 1st and 2nd generation research, failed to provide a complete model of human expertise. Nevertheless, they were fundamental to the development of theoretical alternatives (Alexander, 2003a; Ericsson & Smith, 1991; Holyoak, 1991).

Third Generation: *Multidimensional Research*

Holyoak (1991) suggested that, as more empirical inconsistencies and theoretical anomalies emerged from the research of prior generations, the need for an applicable framework would yield a third generation of expertise research. First and second-generation accounts for expertise were heavily criticized for an inability to explain a wide range of phenomena and characteristics of expert performance such as one's ability to anticipate, plan, evaluate and reason (Alexander, 2003b; Ericcson, 2005; Holyoak, 1991; Rikers & Paas, 2005).

While personality and motivational learner traits were also disregarded in the literature (Ackerman, 2003; Ackerman, Kyllonen, & Roberts, 1999; Alexander, 2003b; Snow, 1989), they were infrequently investigated as viable constructs in research designs and empirical measures of prior expertise studies (Alexander, 2003b). Third generation

researchers have also noted the limited consideration of school context as a pragmatic setting for the study of emerging expertise (Ackerman, 2003; Alexander, 1997, 2003b; Hatano & Oura, 2003; Sternberg, 2003).

Alexander (2003b) argued that these types of methodological constraints limit the generalizability of findings from traditional expertise research conducted in predominantly non-academic domains, and hinder the development of instruments that will measure tasks representative of educational practices. Researchers of traditional cognitive domains such as chess, sports, and medicine also acknowledged challenges to theoretical assumptions and methodologies of traditional expertise research (Ericcson, 2005).

The resulting discontinuity between distinguishing traits of expert performance and facilitating acquisition of these traits has made the transition from research to practice problematic (Alexander, 2003b; Ericcson, 2005). As anticipated by Holyoak (1991), alternative perspectives of expertise development emerged across an array of domains, as a means of improving education or training of less skilled individuals (Ericsson, 2005). These perspectives integrated a multitude of factors that were facilitative of expertise development, as opposed to the singular view of expertise that was adopted by first and second-generation researchers. Embracing a multidimensional view of expertise, third-generation expertise researchers have focused primarily on formulating models of development that account for the combined influences of affective, conative, and cognitive traits on generalizable patterns that are facilitative of expertise acquisition across domains (Ackerman, 2003; Alexander, 2003b; Hatano & Oura, 2003).

Precursors to Third Generation Expertise Research

Problems that occurred in using first and second generation theories to explain empirical findings set the stage for alternative conceptualizations about expertise (Holyoak, 1991). Nonetheless, there were no clear-cut delineations between the ending of one generation of expertise research and the beginning of the next. In fact, a small number of second-generation researchers formulated theoretical conceptions about phases of mastery in expertise development (Genberg, 1992). While components of the latter studies were not inclusive of all third-generation attributes, they demonstrated a paradigm shift away from the dichotomistic view of expertise that was embraced by first and second-generation researchers. Specifically, Anderson's theory of knowledge compilation (1980), Dreyfus and Dreyfus's model of progression of mastery (1986), and Genberg's scale of expertise mastery (1992) are discussed as illustrations of three differing theoretical conceptualizations of mastery in expertise development. The first, based on the information-processing approach, emphasizes the linear application of structured knowledge in well-structured tasks (Anderson, 1983). The second, a more intuitive approach, views knowledge as an understanding of patterns within ill-structured situational relationships (Dreyfus & Dreyfus, 1986). The third conceptualization is a synthesis of the information processing and intuitive approaches (Genberg, 1992). These viewpoints play an integral role in establishing a conceptual framework for the study of pedagogical expertise.

Information processing approach to expertise. Prior research based on the information processing approach of expertise has demonstrated that existing differences between novices and experts are due in part to differences in the organization of their

knowledge bases (Ericsson & Smith, 1991; Glaser & Chi, 1988). For instance, the early work of de Groot (1946/1966), the extension of this work by Chase and Simon (1973), and Newell and Simon (1972) strongly implicated specialized structures of knowledge as the distinguishing factor of chess experts, as evident in their ability to see larger meaningful patterns resulting in faster retrieval of information and problem solving.

Often, models of expertise embedded in the information processing approach were limited by a dichotomous view of expertise development (Alexander, 2004; Ericsson & Smith, 1991; Genberg, 1992). As previously mentioned the use of novice and expert as binary categories did not adequately represent stages of expertise development (Alexander, 2003a).

Anderson's (1980) theory of knowledge compilation was an early attempt to circumvent these limitations. Framed by the information processing approach, he identified three stages in the process of expert skill acquisition. According to Anderson (1980), the first category was the cognitive stage, which facilitates the use of skill independent productions to interpret domain-specific knowledge in task performance. An initial characterization of the interpretation, such as verbal rehearsal of information during the task, would be the evidential of stage attainment (Anderson, 1980; Genberg, 1992). He contended that the repeated application of the skill independent productions would lead to the next phase of development called the associative stage. This stage is described as representing that point in time where skill independent productions are transformed and compiled into skill specific productions. This transformation is aided by the detection and elimination of errors in the initial understanding of the domain-specific declarative knowledge. He further explains that characteristics such as verbal rehearsal

would cease because verbal understanding could be integrated into the productions. The final phase of this model is the autonomous stage, representing continued improvement in performance. Within this stage, the rate of production application is increased in conjunction with developing the ability to discriminate between applicable situations.

This model reflected a general movement towards an integration of knowledge that would result in a smoother performance. It emphasized a linear processing as well as the role of experience by repetitive application. The model indicated that novices' process isolated facts using problem-solving heuristics such as means-ends procedures to work out a solution procedure by trying different possibilities (Genberg, 1992). In turn, experts organize their knowledge according to principles of a particular domain and exercise forward reasoning skills to move from the known to what they are searching for (Anderson, 1980). This model has been applied across several domains in well-structured tasks (Anderson, 1983). Most of the early research on the intermediate phases in the progression of expertise has been based on a hybrid of this model (Genberg, 1992).

Anderson's (1980) theory of knowledge compilation incorporated many attributes substantiated by empirical findings of first and second-generation research and it mirrors many of the same limitations. Specifically, the phases of this model lack clear definitions in terms of identifiable knowledge and behaviors. For example, Anderson (1980) defined the autonomous stage merely as a continuation of the associative stage. Additionally, time and factors that facilitate the progression are unknown. Putman and Borko (2000) pointed out that many early models of expertise development viewed knowing as mere manipulation of symbols and learning as the acquisition of knowledge and skills in isolation. They suggested that this traditionally cognitive perspective did not account for

the effects of interactive systems, such as physical and social contexts, in which the performance tasks may be situated.

Intuitive approach to expertise. In contrast to the analytical nature of the information processing approach, the intuitive approach is an extension of the Gestalt tradition, which emphasized the role of understanding in problem solving (Greeno, 1977). This approach is based on the assumption that the solution to a problem involves an understanding of the critical relationships that exist between elements of a problem (Genberg, 1992). It is markedly different from the information processing approach in that it describes problem solving as a recursive process that goes from representation to planning and searching for a solution in a repetitive manner (Greeno, 1977). During the age of second-generation expertise research there was only indirect evidence supporting the intuitive approach (Genberg, 1992). Nevertheless, it has been described as suited for situations where there is no time to stop and reflect during task implementation, but where immediate reaction is imperative, making its application befitting to the study of pedagogical expertise (Genberg, 1992).

For instance, Yinger (1987) applied this conceptualization to the study of teaching as improvisation. Yinger (1987) conducted a descriptive study that examined the teaching practices of a junior high school mathematics teacher. The author maintained that integration of the teacher's domain knowledge, teaching philosophy, repertoire of teaching strategies, and student characteristics resulted in a teaching performance that was structured by routines, but composed of on the spot decisions in response to the teacher's interpretation of the current situation. Based on this observation, he concluded that pedagogical expertise is grounded in concrete experience that develops an ability to

identify holistic patterns, which provide a framework for activating an appropriate action (Genberg, 1992).

Dreyfus and Dreyfus (1986) assimilated Yinger's (1987) notion of improvisation in their model of expertise progression. This model has been instrumental in framing the development of expertise characteristics in unstructured areas where the goal, relevant information, and effects of decisions taken would be unclear (Genberg, 1992). The novice phase of this model includes learning objective facts and features of a particular skill and incorporating the rules that govern the corresponding performance. Dreyfus and Dreyfus (1986) describe the elements and rules of this phase as "context-free," meaning element identification and rule application can be made without reference to a particular situation. They maintain that the systematic interchange between element and rule fosters an accumulation of experience necessary for progression. The performance criterion is then judged by how well an individual is able to follow the rules.

In the advanced beginner phase of this model, the focus shifts from "context-free" to situationally specific applications. This phase is characterized by recognition of similarities across situations, assessment of situations on the basis of experience rather than rules, and inflexible performance. Dreyfus and Dreyfus (1986) noted that individuals at this stage still lacked an ability to filter extraneous details, resulting in a failure to identify structure within unstructured situations. Advancement to the competence phase involves individuals demonstrating an interpretive understanding that allows for situation assessment, goal setting, and planning that takes into account discrimination of relevant factors. A conative characteristic of this phase is individual ownership of the decision making process (Genberg, 1992). The authors explain that even though their analysis and

decision-making are facilitated in an autonomous manner, individuals at this level feel a personal implication in the choices and results which often become a motivational factor (Dreyfus & Dreyfus, 1986; Genberg, 1992).

The fourth stage of the model, the proficiency phase, encompasses a unitary recognition of situations in their entirety triggered by similar experiences. Dreyfus and Dreyfus (1986) referred to this phenomenon as "holistic similarity recognition." They further explain that, at this point in the progression from novice to expert, the individual has acquired, through experience, the ability to understand and organize a task intuitively but plans and problem solves analytically (Genberg, 1992). For instance, during a rapid succession of events, Dreyfus and Dreyfus described individuals at this stage as readily able to adapt their perceptions of important elements and recognize situations by experience, enabling the individual to recall past problem solving strategies applicable to the present situation. The differentiation between an expert and a proficient performer occurs as deliberative decision-making is transformed into an unconscious, automatic performance (Genberg, 1992). The authors acknowledge the occasional occurrence of deliberation at the expert phase. However, they clarify that it is not compartmentalized, and differs from proficient performers in that it is critically reflexive of the expert's intuition (Dreyfus& Dreyfus, 1986).

As with the information processing approach, the intuitive approach shares a common emphasis on the importance of experience in the development of expertise. Nevertheless, the underlying assumptions for these differing approaches defined expertise development in contrasting ways. Although the Dreyfus and Dreyfus (1986) model forecasts isolated components of third generation expertise research, like the role of

motivation and context in the advanced beginner and proficiency phases of development, both approaches still presented a number of convoluted issues concerning the conceptualization of expertise development (Genberg, 1992).

Both the Anderson (1980) and the Dreyfus and Dreyfus (1986) models differed as to the number of phases within the development process. The Anderson model posited three phases while the Dreyfus and Dreyfus model described five. As already discussed, most of the empirical evidence generated by second-generation expertise research examined the two categories of expert or novice (Alexander, 2003b). Within the phases of both theoretical models, performance behaviors, criteria, and expected time for progression have not been clearly delineated. Dependent factors that would trigger progression from one phase to the next have not been identified as well.

Synthesis of Information Processing and Intuitive Approache to Expertise

In an effort to circumvent the deficits presented by the information processing and intuitive approaches, Genberg (1992), developed a scale of expertise mastery that synthesized elements of Anderson's (1980) theory of knowledge compilation and Dreyfus and Dreyfus' (1986) model. The integration of these two models resulted in a consideration of mastery that is characterized by the hierarchical organization of the information processing approach and the experienced based performance of the intuitive approach. Genberg's conceptualization of expertise proposed identification of four structures across four stages of expertise development. These structures included: state of knowledge, representation of situation, personal involvement, and behavior manifestations. The four stages of expertise development were defined as novice, advanced beginner, intermediate, and expert.

Each of the four structures is defined according to the phase of development (Genberg, 1992). The state of knowledge describes how knowledge indicative of that phase is organized in relation to the information processing and intuitive approaches (Genberg, 1992). For instance, at the novice phase the state of knowledge is organized as isolated facts and elements are not defined by context.

The representation of the situation identifies interpretive elements of a particular context. This structure provides an in depth account of how the interpretations of a situation are categorized across the phases of expertise development. Whereas a novice only has recognition of learned components in a given situation, the advanced beginner is able to recognize the meaning that elements have to the given situation. This characteristic is extended in the intermediate phase, as it transforms into an understanding of the overall structure of elemental relations. The resulting cultivation would then be perception of a situation as a whole, minus the decomposition of interrelated elements occurring in the expert phase of development.

Personal involvement was operationally defined as the presence or absence of responsibility as it pertains to performance outcomes. Arguably Genberg's inclusion of personal involvement in this scale forecasts the examination of motivational factors in expertise development by third generation researchers. Nevertheless, personal involvement within the context of Genberg's (1992) scale of expertise development represented only a vestige of motivation as a construct.

The final structure described by Genberg (1992) consisted of behavioral manifestations. As with the state of knowledge, this structure combines outcome traits characteristic of both the information processing and intuitive approaches. That is to say,

across all four phases of development, the organization of knowledge, the interpretation of situational elements, and the level of personal involvement manifest into behaviors that span a continuum from ruled based to judgmental. The novice in this model demonstrates rule application in the absence of goal setting and planning. The advanced beginner continues these behaviors with initial identifications of important situational elements. The intermediate displays behavior supported by structure, goal setting, and reflection. The expert is able to synthesize all situational components resulting in an unconsciously fluid performance.

There is no empirical evidence validating the application of Genberg's (1992) scale of mastery in expertise development. The author acknowledged this work as an initial step toward stimulating a paradigm shift that encompasses a more comprehensive description of phase development in domain expertise (Genberg, 1992). Collectively, Anderson's (1980) theory of knowledge compilation, Dreyfus and Dreyfus' (1986) model of expertise development, and Genberg's (1992) scale of expertise mastery provided a conceptualization of expertise that yielded the alternative perspectives of the third generation of expertise research.

Models of Third Generation Expertise Research

By the onset of the third generation of expertise research, application of traditionally cognitive models of expertise such as Anderson's theory of knowledge compilation were problematic and ineffective in facilitating expertise development in educational contexts (Alexander, 2003b). The alternative perspectives on expertise development offered by third generation researchers span a continuum of domains.

For example, recent advances in expertise research on medicine (Ericsson, 2005), sports (Deakin & Cobley, 2003; Ward, Hodges, Williams, & Starks, 2004), and chess (Charness, Krampe, Reingold, & Vasyukova, 2005; De Bruin, Rikers, & Schmidt, 2005) have led researchers to develop comprehensive theoretical models that facilitate the improvement of less skilled individuals using mechanisms that support planning, reasoning, self-regulation, and motivation in applied contexts (Ericsson, 2005).

Further, a growing body of research has yielded models of expertise development that pertain explicitly to learning and performance in complex domains (Ackerman, 2003a, 2003b; Lajoie, 2003; Sternberg, 2003). The theory of successful intelligence and the balance theory of wisdom (Sternberg, 1998; Sternberg & Clinkenbeard, 1995), the intellectual investment framework (Ackerman, 1996), the identification of trajectories to expert competence (Lajoie, 1992), and the model of domain learning (Alexander, 1997) address the individual tenets of expertise development from a multidimensional perspective. However, the theory of successful intelligence and Alexander's (1997) model of domain learning both pertain explicitly to traditional school learning (Alexander, 2003b). These two models emphasized components fundamental to expertise progression and considered the evidence-based implications of these models for describing pedagogical expertise development.

Sternberg (2003) argued that approaches utilized by conventional education systems are limited in their ability to foster expertise development that ultimately results in successful real-world application inside or outside the academic arena. He offered that expertise should be identified in a way that is closely aligned to and specific to the disciplines students are being taught (Sternberg, 2003). Sternberg's theory of successful

intelligence (Sternberg & Clinkenbeard, 1995) requires students to think analytically, creatively, and practically. While a focus on the proposed types of thinking are different, the author does not refute the role of traditional expertise constructs such as memory.

Model of Successful Intelligence

Within the model of successful intelligence, creative thinking is defined as a thought process that generates ideas (Sternberg, 2003). The author noted that creativity has to be shaped critically by not only encouraging students to invent and discover, but it also needs to be modeled and reinforced when it is displayed. As a reaction to creative thinking, analytical thinking was the critical evaluation of the generated ideas (Sternberg, 2003). Analytical thinking was fostered by continuous active student engagement in opportunities to analyze, critique, judge, compare, and assess (Sternberg, 2003). The integration of creative and analytical thinking culminated into practical thinking (Sternberg, 2003). Practical thinking was defined as involving the application, implementation, and employment of the ideas that were generated by creative thinking and evaluated by analytical thinking (Sternberg, 2003).

The empirical findings from three intervention studies support the utility of the theory of successful intelligence as a potentially useful way to teach in a school context. Sternberg (2003) points out that using the theory of successful intelligence to catalyze expertise veers from traditionally investigated conceptions like the role of deliberate practice in acquiring expertise (Ericsson, 1996; Ericsson, Krampe, & Tesch-Romer, 1993). In particular, Sternberg found in his research (Sternberg, Torff, & Grigorenko, 1998) that students in the successful-intelligence condition had a higher performance on a measure of memory. While deliberate practice has been found to be fundamental in

obtaining expertise in performance-based domains (Ericsson, 1996; Ericsson, Krampe, & Tesch-Romer, 1993), Sternberg (2003) concluded it was necessary but not sufficient for expertise progression in domains that require creative, analytical, and practical thinking.

Model of Domain Learning

Much like the theory of successful intelligence, the goal of the model of domain learning (MDL) is improved student learning and development (Alexander, 2003b). The MDL attempted to capture the generalizable patterns within the knowledge base, strategic processing, and interest specific to an academic domain across three developmental stages of learning identified as acclimation, competence, and proficiency/expertise (Alexander, 1997). As a framework for tracking the transformation from an abecedarian degree of understanding to one of proficient competence in a domain, Alexander (1997) described the phases of MDL as non-regressive and non-recursive in nature. She further explained that, once proficient achievement has been obtained, a distinction should be retained in the absence of drastic changes to an individual's cognitive and conative characteristics or to changes within the domain itself (Alexander, 1997). The interplay between an individual's knowledge, strategic processing, and interests becomes the mechanism by which learners are propelled forward into the next stage of development (Alexander, 2003b) Collectively, more than 10 years of research on the predicted relations between the three components of the MDL have provided empirical support suggesting them to be robust and informative constructs of expertise development (Alexander, 2003b).

Triadic Dimensions of MDL

Domain knowledge and strategic processing are two of the three dimensions of MDL that are more cognitive in nature and have been identified in the literature base as fundamental to expertise development (Alexander, 1992, 2003b; Chi et al., 1988). Framed by second generational studies in problem solving (Newell & Simon, 1972; Simon, 1978) and the nature of expertise (Chi et al., 1988; Ericcson & Smith, 1997), research on domain knowledge and strategic processing has resulted in several productive lines of inquiry (Alexander, 1992).

Knowledge. In her research on MDL, Alexander (2003b) differentiated two forms of subject-matter knowledge. Domain knowledge was defined as the breadth of declarative, procedural, and conditional knowledge that an individual possesses about a given domain (Alexander & Kulikowich, 1991). Topic knowledge is described as representing how much an individual knows about specific topics within that given domain (Alexander, 2003b). An illustration of this distinction can be drawn from how much one knows about teaching in general (domain knowledge) and how much one knows about a specific content area in the domain of teaching (topic knowledge). In the tradition of second generational theories and models of expertise, an underlying premise of the MDL was to capture the evolving changes in the knowledge base during an individual's active progression toward expertise performance (Alexander, 2003b). However, the limitations of previous models have been circumvented by the previously discussed overarching goals, nature of comparisons, and underlying assumptions that are characteristic of third generation models of expertise development (Alexander 2003b).

Strategies. Strategic processing also has two variants. The processes are procedures that are utilized when a learner wants to maximize performance or to circumvent potential problems in his or her understanding of domain knowledge (Alexander & Kulikowich, 1991). In turn, the strategic processes become a repertoire of strategies that can be applied during the acquiring, transforming and transference of information (Alexander, 1997). Initially, conceptions of the MDL included a categorization of strategic processing by recognition of both general cognitive strategy use in task performance and metacognitive strategies specific to monitoring or self-regulation of one's learning (Alexander, 1997, 2004). Results from early investigations of the MDL led Alexander and colleagues (Alexander & Murphy, 1998) to conclude that this assignment of strategic processing did not allow for relevant developmental differences that could impact the fluctuating relations between strategy use and knowledge. Subsequently, in more recent studies, this dimension has been sorted to distinguish between surface-level and deep-processing strategies (Alexander et al., 2004). As implied, Alexander has defined surface level as those processes used to make sense of information. This included such things as rereading, determining the meaning of unknown terms or paraphrasing, and aid in the initial comprehension of the domain text (Alexander, 2004). In contrast, deep processing strategies were defined as strategy use that facilitated a transformation aided by the detection and elimination of any errors/misinterpretations formulated during surface level processing of the domain-specific knowledge (Alexander et al., 2004; Murphy & Alexander, 2002).

Interest. The third dimension of the MDL substantiated the impact of two forms of interest: individual and situational, on expertise development (Alexander, 1997).

Within the model, individual interest referred to the personal investment an individual had in a particular domain and indicated some form of long-term commitment (Alexander, 2003b, 2004). Subsequent studies of the MDL led Alexander and her colleagues to clarify individual interest even further (Alexander et al., 2004; VanSledright & Alexander, 2002). They were able to differentiate between general and professional interest in this domain. Alexander described general interest as a motivational factor that allowed for engagement in readily available domain-related activities such as additional readings or attending mandatory trainings. Professional interest is described as a motivational factor that led an individual to seek more specialized goal-oriented activity engagement (Alexander, 2003b). These activities could include attending national conferences, conducting action research, or achieving certifications/licensures relevant to a particular domain.

The antithesis, situational interest, reflected a temporary attentiveness triggered by conditions within the immediate environment (Alexander, 2004). Alexander (2003b) noted that this form of interest was transitory as its presence was dependent on the immediate situation. There could be evidence of situational interest across all phases of expertise development. However, there is a natural inclination to expect this form of interest to be more evident in the early phase of domain learning, where a lack of a knowledge base would be a barrier to individual interest (Alexander, 2004).

Triadic Stages of MDL

The model of domain learning delineated the trajectory of growth in expertise development across three stages: acclimation, competency, and proficiency/expertise (Alexander, 2004). Model predictions accounted for the dimensional interactions

(knowledge, strategic processing, and interest), which manifest differently at each stage of development (Alexander, 2003b).

Acclimation. The initial stage of the MDL is referred to as acclimation. This process-oriented term was selected to establish a non-traditional viewpoint of expertise representative of academic domains (Alexander, 2003b). Alexander (2004) described learners at this stage as having a limited knowledge base that was fragmented in its organization. In the absence of a well integrated body of domain knowledge, it is difficult for acclimating learners to discriminate the relevance of information or judge accuracy, making them more dependent on external guidance and surface-level strategies (Alexander, 1997). Often, the application of surface-level strategies is not automatic and requires repeated practice. During the acclimation stage, situational interest is primary in establishing and maintaining a learner's attention and driving task performance (Alexander, 2003b). Alexander referred to this as motivating from without (Alexander, Jetton, & Kulikowich, 1995). Overall, the interactions between subject-matter knowledge, strategic processing, and interest necessitate a reliance on the contextual and functional components within the instructional environment in order to progress towards the next stage of development (Alexander, 1997).

Competence. The second milestone in the progression towards expertise is represented by the competence stage in the MDL. Described as the most encompassing stage of academic development, it is signified by qualitative and quantitative transformations in learners' knowledge base, strategic application, and level of interest (Alexander, 1997). Prerequisite skills for the competence stage include: enough domain-knowledge to allow for an understanding of the domain structure, an effective repertoire

of surface-level strategies that can support problem solving in that domain, or development of a personal association with the domain (Alexander, 2004).

Emergent competence is marked by an increased breadth and depth in the learners' subject-matter knowledge (Alexander, 1997). This overall increase facilitates what Alexander (1997) referred to as a consolidation of subject matter knowledge around domain defining principles. For the learner, task performance becomes anchored in understanding the individual components of the domain. However, Alexander (1997) cautioned that a quantitative increase in subject matter knowledge must be in conjunction with a qualitative change that results in recognition of cohesive knowledge structures within the domain as opposed to acquiring fragments of information in isolation. The beneficial factors related to the development of integrated domain knowledge have been well documented in the more traditional research on expertise (Chi et al., 1988).

In effect, this transformation in subject-matter knowledge is coupled with optimal strategy use (Alexander, 2003b, 2004). The consolidation of a competent learner's knowledge base cultivates discriminate decision making about strategy use that leads to deeper processing and more flexible application during engagement (Alexander, 1997). Alexander (1997) explained that in the initial development of MDL it was assumed that an increase in knowledge integration and automaticity in problem solving would produce a decreased need for general strategy use. On the contrary, observations of strategy use in studies of the MDL indicated an increase in the usage of strategies that support deeper processing of domain content (Alexander, 1997; Alexander et al., 1995; Alexander & Murphy, 1998; Alexander et al., 2004).

Individual interest has emerged as a significant component in the competence stage of expertise development. Changes in domain knowledge and strategic processing have been found to trigger a synchronistic increase in an individual's personal interest in the domain (Alexander, 2003b). Alexander (1997) contended it is realistic to assume that, as a learner is able to internalize a goal of understanding in a particular domain of study, a level of personal interest is manifested. The predicted relationship between interest, knowledge, and strategies has been supported by numerous studies on the utility of the MDL (Alexander, 1997; Alexander et al., 1995; Alexander & Murphy, 1998; Alexander, Kulikowich, & Schulze, 1994b). Specifically, findings from cluster analytic studies conducted by Alexander (1995; Alexander & Murphy, 1998; Alexander et al., 2004) have indicated that an individual's personal and professional investment in the target domain stimulates strategic performance (Alexander, 2004).

Proficiency/Expertise. Whereas the conversion from acclimation to competence is hallmarked by distinct growth in their domain-knowledge, interest or their problem-solving abilities, the transition to proficiency is characterized by a display of discernment in all the underlying dimensions of the model (Alexander, 2004). Alexander (1997) contended that attainment of proficiency is predicated upon exceptional levels of knowledge, interest, and strategic processing coupled with the ability to circumvent obstacles that prove too much for the typical learner. Furthermore, she argued, it is unreasonable to assume that all who set out on this narrow developmental path have the capability or the drive to pursue proficiency or expertise in a domain.

A trajectory toward a higher level of integration within domain knowledge is fundamental to proficient learners (Alexander, 1997). With a knowledge base described

by Alexander (2003) as both broad and deep, these learners are more inclined to forge connections between specific topics and the broader domain of study to the point that it is difficult to decipher between their understanding of topic knowledge and their cohesive knowledge structure (Alexander, 1997; Alexander, Kulikowich, & Schulze, 1994b). The resulting metamorphosis leads a proficient learner to create new knowledge by active engagement in *problem finding* (Alexander, 2004). Alexander defined problem finding as a higher form of strategy use that involves posing questions and instituting investigations that are instrumental in redefining the very base of knowledge or core principles that formulate the particular domain of study (Alexander, 1997, 2004).

This trajectory toward a higher level of integration has a direct bearing on the individual interest of proficient learners (Alexander, 1997). The relationship between knowledge and interest has garnered much discourse in the educational literature (Alexander, 2003b). Alexander (1997) acknowledged the existing disagreements as to whether interest is just a mediating variable in knowledge acquisition or coextensive in domain learning. However, her stance was that the two dimensions were collaterally connected and the existence of this connection has been confirmed by cluster analyses studies on the model of domain learning (Alexander et al., 1995; Murphy & Alexander, 2002; Alexander et al., 2004). As such, along the developmental continuum of the MDL there is little evidence of individual interest in the acclimation stage and almost a total reliance on external motivators (Alexander, 1997). In contrast, during the proficiency stage interest functions as a powerful stimulant reflecting a strong association between the two dimensions (Alexander, 1997).

Implications of Third Generation Models of Expertise

Collectively, the models of the third generation of expertise research offer theoretical and practical significance to the study of pedagogical expertise. These models contribute to a raised consciousness about learning and development through an elucidation of particular constructs empirically identified as able to propel learners forward in their progression towards domain expertise (Alexander, 1997). One of the clear implications of both Sternberg and Alexander's models of expertise for application is in the development of teacher preparation programs.

A growing body of research suggested that the quality of teacher expertise is pertinent to teacher effectiveness (Borko & Livingston, 1989; Darling-Hammond, 2000; Schempp, Manross, Tan, & Fincher, 1998; Swanson, Conner, & Cooney, 1990). As a result, there has been an emergence of teacher preparation programs that are inclusive of components similar in nature to the fundamental constructs of Sternberg's theory of successful intelligence. For example, in a review of literature on the reform of teacher preparation programs, Darling-Hammond (1999) noted an increase in the use of case analysis to develop pedagogical content knowledge skills. Pedagogical content knowledge focuses on how specific content knowledge is taught (Shulman, 1986). The use of case studies provides authentic opportunities for teachers to practice the basic professional processes of developing, analyzing, problem solving, and decision-making (Doyle, 1990), much like the analytical, creative, and practical characteristics of the theory of successful intelligence (Sternberg, 2003).

The model of domain learning presents a dual function in the role of teacher preparation. First, as pointed out by Alexander (2003b), development within an academic

domain has many complexly interrelating elements. As such, it becomes paramount that teachers as educators have grounding in the tenets of expertise development (Alexander, 1997) in order to cultivate students' domain expertise effectively. At best, most preparation programs and professional development initiatives are limited in scope and often disconnected in their presentation of content knowledge, strategic applications and motivational techniques (Darling-Hammond, 2000). Even in requisite coursework that is specific to human development, there is a lack of consideration for the nature of academic development (Alexander, 1997). With the enactment of mandates such as No Child Left Behind 2001, student achievement has reached a crucial level of importance. Thus it is incumbent upon the field to prepare educators who understand the learner-centered psychological principles that move students with differing cognitive abilities along a trajectory of growth towards domain expertise (Alexander, 2004; Darling-Hammond, 2000).

The second function of MDL in teacher preparation has a direct bearing on the understanding of teaching and the learning-to-teach process. Major approaches employed in pedagogical preparation fall within three frameworks. Doyle (1990) categorized these frameworks as precept and practice, information-processing approach, and knowledge and understanding.

Most traditional teacher education programs have been formulated on precept and practice (Darling-Hammond, 2000; Doyle, 1990). Doyle (1990) contended that these precepts usually included propositions concerning the nature of child development and instructional practices, and the maxims, aphorisms, and tips acquired from practical experience. Equipped with information that was presumed to have practical applications,

students of pedagogy were sent into field settings to acquire practical skill. The implementation of this framework resulted in a disconnect between the precepts and the practice (Doyle, 1990), and has been criticized repeatedly for reducing the act of teaching into a something that could be routinized through the application of precepts by way of practice (Darling-Hammond, 2000).

Over the past decade, teacher preparation programs in institutions of higher education and school districts have been redefined to include teacher education strategies that facilitate the development of teachers' problem solving and decision making skills (Darling-Hammond, 2000). An emphasis on cognition in teaching shifted the exclusive focus from skills and behavior to providing instruction that would furnish controlled practice in connecting knowledge to situations via case analysis (Doyle, 1990). While this framework underscored the importance of teacher engagement in decision processing, Doyle (1990) explained that it was limited in explicating domain-specific knowledge teachers use to define problems or forge decisions.

The final framework described by Doyle (1990) encompassed knowledge and understanding. Continuously seeking to reform and improve teacher education, the proverbial pendulum of education swung to focus on increasing the domain knowledge in preservice and inservice teachers (Darling-Hammond, 2000). Although, the benefits of domain knowledge have been thoroughly documented in the existing literature base, Darling-Hammond (1999) pointed out that the relationship between subject matter knowledge and teacher performance is curvilinear, meaning it has a positive effect up to a threshold and then tapers off in level of influence.

However informative, these three frameworks are limited in their ability to provide the fully elaborated view of expertise development that is offered by the MDL. The quality of teacher expertise has been found to be pertinent to teacher effectiveness (Borko & Livingston, 1989; Darling-Hammond, 2000; Schempp et al., 1998; Swanson, Conner, & Cooney, 1990), and definitive evidence solidifies the ability of MDL to explicate this development (Alexander, 2004). Incorporation of the trajectories plotted in the MDL for teacher education programming would generate a gradual transformation produce teachers possessing a well integrated knowledge base. They would understand how to represent ideas in effective ways and organize productive learning processes that address cognitive dissonance across varying student populations (Alexander, 2004; Darling-Hammond, 2000).

In conclusion, research representing the third generation of expertise has enriched the field with alternate perspectives that considered critical theoretical, methodological, and instructional questions left unanswered by earlier generations of expertise studies (Alexander, 2004). Whereas earlier generations of expertise research were influenced by a canonical view of expertise performance that garnered major uniformities of expertise across different domains (Holyoak, 1991), third-generation studies have explicated internal mechanisms fundamental to movement within expertise development.

From this body of research, the field has developed an understanding of expertise development that includes the following propositions: a) between the extremes of novicehood and expertise lies a spectrum of subtle systematic changes that occur within and across multidimensional characteristics of the learner; b) in addition to cognitive attributes, motivational factors are intrinsic to movement in expertise development; and

c) indicators of expertise present a direct relevance to learning and its application in contexts of formal schooling will have far reaching implications for improved teacher education and student achievement (Alexander, 1997, 2003b, 2004; Berliner, 2005; Darling-Hammond, 2000).

The components of the Model of Domain Learning inform the theoretical framework for the present study. The objective of this study is not to investigate directly the utility of the MDL in describing a trajectory of expertise development. The primary focus is to describe the characteristics of more experienced and less experienced special education teachers while engaged in a domain specific task and determine if these characteristics align with predicted behaviors according to the interactions between the triadic stages and phases of development in the Model of Domain Learning.

Domain General: Characteristics of Teacher Expertise

In the general domain of pedagogy, teachers are required to solve problems; manage classroom environments; represent content knowledge in ways that organize a productive learning process for students with differing abilities and kinds of learning experiences; assess how and what they are learning; and adapt instruction to incorporate all modalities (visual, auditory, tactile/kinesthetic) of learning (Fitzgerald, Wilson, & Semrau, 1997; Spiro & Jehng, 1990). The act of teaching requires the construction of plans and making rapid on-line decisions within a dynamic environment. In the field of cognitive psychology, teaching is often examined as a complex cognitive skill (Borko & Livingston, 1989).

Until recently, the application of the novice-expert paradigm as a means of investigating this complex cognitive skill has been rare (Ericsson & Smith, 1991). Many

researchers contend that a deeper understanding of the cognitive processes inherent in the teaching profession is necessary to improve current practices of teacher preparation (Berliner, 1986; Borko & Putmam, 1996; Leinhardt & Greeno, 1986). Still, researchers only minimally understand teachers' processes of interpretation, personalization of theory, and synthesis of data into conceptual frameworks that guide their actions in practice (Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987). Most of the existing research on experts has been conducted outside the field of pedagogy, largely because educational phenomena have been considered too ill defined to study expertise adequately (Berliner, 1986).

Despite a lack of consensus about definitions of constructs fundamental to teaching expertise (Beijaard & Verloop, 1996; Blanton, Sindelar, Correa, Hardman, McDonnell, & Kuhel; 2003), scholars in education and psychology have produced a set of well-warranted assertions about the characteristics of expert teachers (Berliner, 2005). As the general psychological literature on expertise accumulated, it became apparent to educational researchers that identified characteristics of expertise in other domains may be applicable in the identification of effective teaching, marking the early beginnings of research in pedagogical expertise (Berliner, 2005).

In what follows, I briefly review a sample of propositions garnered from studies of pedagogical expertise exemplary of what is known about teacher expertise in general. In lieu of an exhaustive review of research conducted on expert-novice differences across components of teaching, which share strong similarities with traditions of second-generation expertise research, concerns of the research methodology are highlighted to demonstrate a need for studies that inform the development of expertise in pedagogy.

Components of Teacher Expertise

The act of teaching has been described as consisting of a series of complex relationships between teachers' cognitive understanding of content knowledge and pedagogical skill (Hogan, Rabinowitz, & Craven, 2003; Shulman, 1986). From a pragmatic perspective, the organization of the complex components involved in the act of teaching has been beneficial in synthesizing these characteristics across the literature on teacher expertise. An organizational framework described by Shulman (1986) has been repeatedly cited across a wide variety of research agendas within the domain of teacher expertise (Hogan et al., 2003). Its utility has proven useful in the deconstruction and identification of components that have traditionally defined effective teaching by educational practitioners and policymakers (Hogan et al., 2003; Shulman, 1987).

Shulman (1986) maintained that for teachers to be effective proficiency must be demonstrated within three domains: content knowledge, pedagogical content knowledge, and pedagogical knowledge. Content knowledge was defined as an understanding of the concepts inherent to the domain being taught. Content knowledge within this context required an understanding of the structures in a manner that would allow teachers to know the fundamentals of the content, the purpose of those fundaments, and the role fundaments play in pedagogical judgments regarding curriculum and instruction (Shulman, 1986).

Pedagogical content knowledge, as referred to by Shulman (1986), entailed the ability to project content knowledge through multiple modes of teaching that facilitate student understanding, comprehension, and achievement across individual learner characteristics (Hogan et al., 2003). He contended that since representation of content

knowledge was not singular in nature, a teacher must have an armamentarium of alternative forms of representations to explain core concepts (Shulman, 1986).

The third domain, pedagogical knowledge, represented skill sets essential to creating classroom environments that are conducive to learning. These skills include management techniques, effective communication strategies, as well as ongoing assessment of student learning outcomes (Hogan et al., 2003; Shulman, 1986). These domains suggested by Shulman (1986) presented an organizational schema that has characterized and systematized components of teacher expertise in a number of literature reviews of research on expert-novice differences among general education teachers (Blanton et al., 2003; Hogan et al., 2003; Shulman, 1986).

Content Knowledge

According to Shulman (1986) examples of concepts within the domain of content knowledge could include curriculum planning, instruction, and the perception and reflection of classroom events. The literature examining content knowledge (Allen & Casbergue, 1997; Borko & Livingston, 1989; Housner & Griffey, 1985; Peterson & Comeaux, 1987; Shulman, 1986) suggested specific differences in the way expert and novice teachers organize their thinking when engaging in the task of planning a curriculum. Experts' enhanced understandings of the concepts embedded within the domain being taught are assumed to emerge from their highly developed schemata (Shulman, 1986). Peterson and Comeaux (1987) conducted a study of schematic differences in expert and novice teachers. They hypothesized that differences would exist in teacher recall of classroom events and analysis of problems during interactive teaching. Ten experienced high school teachers and ten student teachers participated in a

videotape of their teaching, did a structured interview, and completed three ability tests to generate data for the study. Findings supported the hypothesis that experienced teachers have a better developed schema for collective components related to classroom teaching, allowing for elaborate and interrelated processing and understanding of classroom events.

The advanced schemata of experts also account for differences in the planning of the curriculum. For instance, Housner and Griffey (1985) conducted a comparison study of expert and novice physical education teachers. The results indicated that experienced physical education teachers needed more specific information than novices before planning lessons to teach skills in basketball. Experts inquired as to availability of equipment, student ability levels, type of facility, and prior knowledge of the students. In contrast, novices tended to disregard pertinent information and concentrate strictly on the development of the lesson itself. Although the analyses yielded no significant difference in the types of activities included in both the experts' and novices' lesson plans, more often experts made allowances for classroom situations that could occur in isolation of the lesson plans. Experts also planned twice as many strategies to teach a specific skill than did the novices.

Borko and Livingston (1989) conducted a similar study with expert and novice mathematics teachers. They reported significant differences in the processing of mentally scripted lessons and in the development of goals for instruction. They concluded that novices tended to focus on planning of short-term goals whereas experts focused on long and short-term curriculum development. Novices also generated highly scripted and well rehearsed instructional strategies. Experts' planning was largely unrehearsed and unscripted.

Another major component of content knowledge is reflection. Reflective teaching is a readily examined construct in the development of effective teachers. There is a general consensus that reflectivity facilitates professional growth (Lindop, 1985; Ross, 1989; Wildman & Niles, 1987). Some studies have suggested that professional growth cannot be achieved without reflection on one's teaching (Cruickshank, Kennedy, Williams, Holton, & Fay, 1981). However, reflection is a construct characterized by ambiguity in the field of cognitive psychology (Bruer, 1993; Kennedy, 1989).

There is much debate over the operational definition and systematic measurement of the construct. Nevertheless, reflective behaviors have been identified as prerequisite skills for anticipating problems, responding quickly and planning alternate activities as preventative measures (Klein & Hoffman, 1993). Allen and Casbergue (1997) researched the thoroughness of recall in novice, intermediate, and expert elementary school teachers. Twelve elementary teachers varying in teaching experiences participated in an observation and structured interview to determine their level of recall of specific classroom behaviors. Findings indicated differences in progression of recall among novices and experts. Mainly, novice teachers tended to recall their own behaviors more than specific student behaviors. In general, the findings suggest that the ability to recall thoroughly increases as teachers gain experience.

Pedagogical Content Knowledge

Pedagogical content knowledge focuses on how the content knowledge is taught. Given the complexity of instruction, the "how" of it can be illustrated often in teacher routines and model demonstrations (Hogan, Rabinowitz, & Craven, 2003). Leinhardt and Greeno (1986) hypothesized that the advanced schema of an expert math teacher could be

dissected into smaller segments, namely routines and information schemata. Routines referred to activities that are consistently and successfully completed each day with little mental effort. Information referred to the ability to collect facts from a situation that will be used later in the lesson. A framework was designed specifically to outline the goals, actions and/or consequences used when orally checking student homework, communicating new math vocabulary, and presenting new math concepts to students. The purpose of the study was to examine the frameworks critically by observing both expert and novice teachers and by identifying extant differences between the two groups.

For a period of three months, researchers observed eight experts and four novices during mathematics instruction at an elementary school. Findings suggested that experts in comparison to novices are able to spend considerably less time transitioning from one activity to the next, present more concepts and examples in a shorter time frame, and are more efficient in probing for student comprehension. At the same time, the classroom routines of experts allowed them to use more guided and monitored practice during a lesson than did the novices.

Pedagogical content knowledge has also been influential in the methods of demonstration that experts use to model domain specific constructs. Clermont, Borko, and Krajcik (1994) did a comparative study of the pedagogical content knowledge of experienced and novice chemistry teachers. Participants completed a questionnaire that included a self-rating scale of confidence in modeling demonstrations during class instruction and in the average number of demonstrations that occurred in their classroom per week. Consistent with other studies (Carter et al., 1987; Hashweh, 1987), expert

teachers reported themselves highly confident in modeling demonstration lessons and utilizing this type of strategy more frequently that novice teachers.

Participants also viewed a videotape of two teachers modeling demonstration lessons to teach chemistry. Using a verbal protocol methodology, they were asked to discuss whether they thought the segment either facilitated or impeded the ability of the demonstration to promote student understanding of the concept. Qualitative interpretation indicated that expert and novice chemistry teachers varied extensively in several ways. Experienced chemistry teachers were able to discuss several alternative demonstrations that could be used to teach the same concepts, whereas novices on average only could offer one other alternative demonstration lesson. Findings also revealed that experienced participants had an understanding of how the materials and tools could potentially cause misconceptions of the illustrated concept. Novices, in comparison, seldom discussed possible misconceptions and could only offer few suggestions of how to simplify the demonstration lesson to increase student understanding.

The aforementioned studies examined the differences between experts and novices in components of pedagogical content knowledge under the assumption that characteristics of both groups are stable across classroom situations. Yet how does one explain situations where an expert teacher in one arena performs like a novice in another? Rich (1993) conducted a study to investigate the role of stability and change in expertise. He contended that once a teacher is characterized as an expert, it is unlikely that they will lose that category. Rich assumed that teachers would carry their expertise with them across all educational settings and it would be unaffected by internal and external environmental conditions common to pedagogy. Clearly, research suggests that expertise

is a characteristic of the individual (Ericsson & Smith, 1991; Genburg, 1992; Shulman, 1986). However, Rich suggested there should be a relation between expertise and the context in which it is applied.

Rich's investigation evaluated a language arts curriculum unit that was taught four hours weekly. It utilized Student Teams-Achievement Divisions (STAD), a strategy that employs cooperative learning in small groups to prepare students for an individual quiz. The curriculum was implemented in 14 seventh grade classes in five Israeli schools over a period of 8 weeks. Participants in this study were nine teachers (6 experts and 3 non-experts) who had at least four years of classroom experience, but had never used methods of small group instruction in a systematic way over an extended period of time. These teachers received detailed lesson plans and 20 hours of inservice training. Throughout the investigation, they had weekly consultations with mentors who were experienced with the STAD strategy and the curriculum unit.

Analyses identified four types of participating teachers who varied on stability and change. One of the six teachers who were experts before implementing the curriculum continued to demonstrate pedagogical expertise on the performance task. Rich referred to this participant as a temporary novice. The next group included the three participating non-expert teachers, whose lack of skill extended throughout the implementation of the strategy. The third type included three teachers who had been categorized as experts, but functioned as novices through the implementation phase, and were reportedly showing strong indications of becoming experts again. The final group consisted of two expert teachers who exhibited characteristics of novices on the performance task without any indication of performing again as experts.

From the findings of this study, one could argue that not all expert teachers are cut from the same cloth. In practice, expertise for some teachers may be situationally specific to particular pedagogical settings so that in unfamiliar situations, like a change in curriculum standards, instructional assignment, or the mandated use of a new instructional strategy, they are no longer demonstrating the cognitive or behavioral characteristics of experts.

As previously pointed out, the conclusions drawn from the Rich study do not negate the results from prior reviewed studies that found important difference between expert and novice teachers (Allen & Casbergue, 1997; Borko & Livingston, 1989; Clermont et al., 1994; Housner & Griffey, 1985; Leinhardt & Greeno, 1986; Peterson & Comeaux, 1987). Alternately, Rich contended that the findings identify the existence of within group differences and the role of these differences in the comprehensive understanding of teacher expertise.

Pedagogical Knowledge.

Effective management of a classroom full of students is one of the most vital tenets of pedagogical knowledge (Shulman, 2000). How teachers perceive and manage the dynamic classroom has been documented as having a profound impact on student achievement (Clarridge & Berliner, 1991; Swanson, O'Conner, & Cooney, 1990). Swanson and a team of researchers (1990) investigated how teachers mentally represent and solve classroom management issues. Six classroom vignettes were developed that targeted the specific management issues created by students talking at inappropriate times, students not following instructions, or arguments occurring during instruction. Employing a verbal protocol methodology, 48 teachers were asked to read the vignettes,

discuss their initial thoughts concerning the problem, and then identify steps that would lead to an effective solution. The participant responses were coded as heuristics and strategies were referred to as mental components. Findings revealed a greater number of mental components for expert teachers. Swanson concluded that expert teachers define the problem, whereas novices were more interested in quickly solving the problem.

It has long been recognized that how teachers perceive student behavior is related to teacher behavior toward students, thus effecting classroom management (Allen & Casbergue, 1997; Borko & Livingston, 1989). Clarridge and Berliner (1991) considered the differences in how expert and novice teachers perceive student behaviors and their implications for classroom management. Based on the theory of expertise development of Dreyfus and Dreyfus (1986), a purposive sample of 19 teachers was categorized into groups of experts, advanced beginners, and novices.

Each subject was required to plan a lesson on probability. After planning, all subjects were given a list of student names with fabricated test scores. All participants were alerted to potential behavior problems of two students. Subjects viewed a videotape of their lesson and simultaneously discussed what was occurring.

Qualitative analyses provided evidence that suggested experts saw problem behaviors as typical, and easy to handle during instruction. Novices, by contrast, did not have the experience and the pedagogical training to react appropriately to unacceptable behaviors or they were more likely to ignore them. Furthermore, experts gave explanations for the behaviors that involved aspects of the planned lesson, while novices attributed the behaviors to things outside of themselves. However, there were no differences found in how teachers categorized students and set student expectations based

on behaviors. The implication from this study was that expert teachers were just as hasty as novices in making these types of judgments. Placing students in appropriate categories is fundamental to teachers and crucial to student achievement. It allows a teacher to create a type of order in a dynamic and busy environment. Premature categorization could be detrimental to students by promoting inaccurate expectations.

Verbal communication is an essential skill that enables teachers to convey classroom expectations, assess student knowledge through questioning techniques, and effectively deliver direct and systematic instruction. Sanchez, Roses, and Caned (1999) examined verbal discourse to identify possible differences in the communication strategies implemented by expert and novice teachers during classroom instruction.

Nine novice and nine expert teachers were required to teach two classroom lessons. The lesson presentations were tape recorded, transcribed, and analyzed. The discourse was examined under three categories: the given (any assessment of students' prior knowledge), the new (presentation of new ideas that built on student prior knowledge), and evaluation (verification of student understanding). Within the categories of given and new, expert teachers were better equipped than novices to communicate effectively with students in various ways that engaged students in sharing their prior knowledge. They were also more skilled at making connections between new and prior knowledge. Discourse in the category of evaluation indicated that expert teachers assessed student comprehension during the entire lecture, whereas novices did not. Usually, the expert teachers used higher order questioning strategies. Novices primarily asked rhetorical questions to guide their instruction.

Thus far this review of the pedagogical knowledge domain has examined specific teaching competencies in the areas of management, perceptions, and communication. Collectively, these components enable teachers to create environments that are conducive to improving student performance. O'Connor and Fish (1998) were interested in identifying differences between the classroom environments of experts and novices. Eighteen classrooms were observed during their study. Both students and teachers completed the Classroom Systems Observations Scale. This instrument was designed to measure the overall cohesiveness of a classroom with emphasis on teacher flexibility and student teacher communication.

As with similar studies (Borko & Livingston, 1989; Westerman, 1991) classes taught by expert teachers exhibited a balance in flexibility that classrooms of novice teachers did not. Analysis of the data indicated students in more flexible classrooms were better able to adapt to different learning situations that may occur during a routine day. Additionally, they had high scores on the communication items of the CSOS in the expert classrooms. However, no significant differences in collective cohesiveness of the classrooms were identified. The conclusion from the study was that the skills necessary in creating a warm environment might not be dependent on the amount of teacher experience.

Limitations of Pedagogical Expertise Research

Research on expertise in the general education classroom has been used to conceptualize the nature and organization of teachers' instructional knowledge and how these teachers make instructional decisions (Berliner, 1986; Leinhardt & Greeno, 1986; Peterson & Comeaux, 1987). Several studies reviewed have suggested that expert

teachers have an advanced schema that allows for high-level knowledge organization (Borko & Livingston, 1989; Carter et al., 1987; Swanson, O'Conner, & Cooney, 1990), that expert teachers make differential judgments about students (Allen & Casbergue, 1997; Bork & Livingston, 1989; Coleridge & Berliner, 1991), and that they use information about their students when planning and implementing instructional strategies (Cruickshank et al., 1981; Houser & Griffey, 1985). The existing evidence from this body of research solidifies the ability of the expert-novice paradigm to extract and identify adequately the mental processes that occur during the act of teaching.

While much knowledge can be gained from the studies of pedagogical expertise, several concerns have been raised regarding the methodology and procedures used in the course of these studies (Alexander & Judy, 1988). Specifically, issues surrounding the description of subjects and methodology will be discussed. Due to the consistency of concerns in the body of expertise literature, the discussion will focus on the relevance of these issues across studies as opposed to how they relate to any single investigation (Alexander & Judy, 1988).

Description of subjects. Precise descriptions of subjects are necessary in order for readers to determine the degree of transferability to their own situations (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005). The vast majority of the studies reviewed were designed with qualitative methodology. In qualitative studies, the description of subjects is central to the establishment of credibility (Bratlinger et al., 2005). Generally, with in the expert/novice research, terminology used to describe the subjects was often ambiguous and open to problematic interpretation (Alexander & Judy,

1988; Palmer, Stough, Burdenski, & Gonzales, 2005). Descriptive terms included such words as novice, expert, intermediate, advanced beginner, and postulant teacher.

When definitions were offered, they were exclusively defined in terms of years of service. However, it was difficult to distinguish comparability of performance patterns of individuals labeled with such an array of terminology (Alexander & Judy, 1988). This raises the question on whether those labeled as experts in one study can be compared to experts from another study. While there has been consistency across studies of expert behavior, it has been mostly in procedurally rich domains with well-defined tasks (Alexander, 2003b). In a domain such as teaching where there are often multiple paths to problem solving, more description is needed to differentiate clearly one group from another. In conjunction with the small sample sizes, a rich description of the subjects becomes a requisite compensation (Alexander & Judy, 1988).

Methodology. Several points can be made regarding the methodologies of the reviewed studies in terms of operationalizing or describing the phenomena of study, and the analysis of verbal data. Whether describing an independent variable or phenomenon of study, precise descriptions are crucial to establishing the credibility of findings from an empirical investigation (Gersten, 2000).

Given that the reviewed studies fall within the domain of pedagogy and primarily focused on instruction, careful consideration should have been given to a clear description of observed tasks. For instance, across the reviewed studies descriptions offered only half-formed images of the specific actions and behaviors that constituted constructs that are more difficult to conceptualize such as pedagogical reasoning skills, mental representations, mental scaffolding, and expositive discourse, just to name a few.

It is important to acknowledge that instructional tasks may vary significantly from study to study and that, within a study of pedagogy, the task description may only be a marginal representation of what the task may have actually looked like (Gersten, 2000). This variation of components has been documented in virtually all areas of research in the domain of instruction (Kennedy, 1997). It is imperative in studies where researchers attempt to understand an educational phenomenon that there is a clear match between what is identified as the phenomenon of study and the subsequent teacher behaviors that constitute the defined task.

Domain Specific: Special Education Teacher Expertise

Despite the rich descriptions of teacher behaviors, studies on teacher expertise in general education classrooms have provided limited insight into the cognition of teachers in the unique settings cultivated in special education classes (Brownell, Ross, Colon, & McCallum, 2003). Within the context of these specialized settings, special educators are required to work effectively and efficiently with diverse populations in a wide array of complex and ambiguous situations that cannot be solved the same way every time. These unique and unpredictable environments are referred to as "ill-structured" situations (Rojewski & Schell, 1995; Spiro & Jehng, 1990). Ill-structured situations necessitate the need for multiple representations of knowledge (Spiro & Jehng, 1990), continuous adjustment of teaching techniques (Stough & Palmer, 2001), and flexible adaptation of basic and advanced knowledge to solve teaching and learning problems (Rojewski & Schell, 1994). Minimal research has been conducted on the expertise of special education teachers (Rojewski & Schell, 1994; Stough & Palmer, 2001; Stough, Palmer, & Sharp,

2001). This gap in the literature base is particularly notable, given the complex nature of teacher cognition in special education classroom settings.

However, there is a line of research that focuses on differences among general and special education teachers (Blanton, Blanton, & Cross, 1994). In the vast majority of studies, researchers have: a) investigated differences in general and special educators' expectations of students with disabilities (Foster & Keech, 1977); b) explored teacher perceptions and tolerance of student behaviors (Ritter, 1989; Safran & Safran, 1987; Safran, Safran, & Barcikowski, 1985); c) examined treatment of students with disabilities by general and special education teachers (Thompson, White, & Morgan, 1982); and d) examined similarities and differences in special and general educational settings (Allington & McGill-Franzen, 1989; Haynes & Jenkins, 1986).

Blanton and her colleagues (1994) reviewed these studies. They contended that while general and special education teachers possess a similar repertoire of instructional strategies, special education teachers possess a more elaborate organization of knowledge from which to activate interpretations and problem solving in reference to students with learning problems. This is consistent with readily identified characteristics of domain expertise (Swanson et al., 1990). Even in light of the highlighted differences identified from this body of research, very little is known about the expertise of special education teachers (Blanton et al., 2003).

Following in the tradition of second-generation expertise research, most pedagogical expertise studies in special education have employed sharp comparisons and contrasts between two dichotomous groups, experts and novices. While these studies share the same methodological limitations as traditional expertise studies, they provide a

foundation for characterizing pedagogical expertise among special educators. For organizational purposes, the framework developed by Shulman (1986) will be used to systematize the review of studies across content knowledge, pedagogical content knowledge, and pedagogical knowledge of special education teachers.

Content and Pedagogical Knowledge of Special Educators

Investigations of special education teachers' content knowledge have been few in number. Constructs related to content knowledge such as curriculum planning and decision-making have been less prevalent than studies investigating reflective practices. However, characteristics reflective of instructional planning and problem solving strategies have emerged from data collected in studies of reflective practices (Stough & Palmer, 1996).

For instance, Stough (2003) explored the nature of instructional thought in expert special education teachers. She used purposeful sampling to select 19 certified special education teachers. A confirmatory-nomination procedure was used to identify these teachers as experts against a set of defined criteria. The teachers were videotaped during classroom instruction and later participated in a simulated recall procedure.

In this grounded theory, teacher concern for student performance emerged as the central phenomenon, but one of the intervening conditions was teacher knowledge (Stough, 2003). Stough (2003) contended that the knowledge base of the participants was well integrated and their concern was a motivational factor in their extensive knowledge of student characteristics. The data analysis also indicated that the participants possessed a high degree of knowledge related to educational practice by demonstrating usage of pedagogical skill to modify student tasks. Most importantly, Stough (2003) argued that

the concern for individual needs of a student manifests itself differently in special education teachers than general education teachers. She further explained that, even though both groups of experts have extensive pedagogical and content knowledge, general education teachers channel this information into the design of instruction for the whole class as opposed to special educators designing for the individual student.

Among the most salient characteristics of expertise performance are teachers' knowledge structures that are highly contextual (Peterson & Comeaux, 1987). Lindsay (1990) conducted a case study to gain insight into the knowledge structure of a special educator and make a comparison with characteristics of pedagogical expertise common across expertise literature. As the data emerged, Lindsay (1990) found that the participant's knowledge base was comprised of three levels: fundamental, operational, and intermediary.

The fundamental level of the participant's knowledge structure was greatly influenced by pedagogical principles gained primarily from university content courses (Lindsay, 1990). Similar to the findings of the study conducted by Stough (2003), an extensive knowledge base about learner characteristics was a component of the participant's knowledge structure foundation. Interestingly, contextual constraints also played a key role in how her knowledge interacted with aspects of daily teaching.

At the operational level, Lindsay (1990) contended that components of the fundamental level manifested as a routinizaton of pedagogical skill. The intermediate level, mediated by the operational and fundamental levels, allowed the teacher to integrate and exhibit the interactions of the three levels as demonstrated by direct instruction with instructional objectives.

In a comparison, Lindsay (1990) argued that the knowledge structure of special educators is very similar in makeup to the knowledge structure of expert general education teachers. The participant demonstrated extensive knowledge that was highly procedural and goal oriented; this allowed for routinization of skills and highly purposeful teaching (Lindsay, 1990).

Pedagogical Knowledge of Special Educators

As defined by Shulman (1986), pedagogical knowledge allows teachers to manage classrooms effectively. It is a vital skill for general education classrooms (Shulman, 1986), but the nature of special education classes, the context in which they function, and the characteristics of each student make pedagogical knowledge an imperative component of special education teachers' repertoire of skills.

Surprisingly I was unable to locate a study that investigated classroom management differences between expert and novice special educators. However, in studies that focused on differences in the reflective thought of experts and novices (Bartelheim & Evans, 1993; Stough, 2000, 2001; Stough & Palmer, 1996), classroom management was frequently mentioned as an analytical category. It should be noted that three of the studies failed to mention classroom management as part of the same project, though reporting on the same data, thereby offering little insight into how special educators manage the many tasks they encounter during daily classroom instruction.

Implications

The review of pedagogical studies across general and special education contexts reveals an existing gap in the literature. Teacher behaviors associated with expertise are similar on tasks that are common across both settings, such as an enhanced understanding

of the concepts embedded in the content being taught that emerges from their highly developed schemata. Insight has been limited into what expert behavior looks like on tasks exclusive to special education settings has been limited (Alexander, 2003b; Stough & Palmer, 1996). There is a need for research that uses the construct of expertise to conceptualize the knowledge that special educators use in tasks specifically designed to educate students with disabilities. Given the performance expectations that have resulted from standards based reforms, the changing role of the special educator necessitates a close examination of tasks that have direct bearing on overall achievement of students with disabilities.

Task Specific: IEP Development

The development of a student's individual education plan (IEP) is one of many tasks exclusive to special education settings. Designated by law to define an individually tailored instructional program (Dragslow, Yell, & Robinson, 2001), the IEP is monumental in guiding students with disabilities towards meeting expected learner outcomes. To gain an understanding of the factors that affect the development of an IEP, a brief history of the law and current educational legislation are discussed in terms of how they impact the instructional planning involved in this task.

Historical Perspective of the IEP

The Individualized Education Program (IEP) has been the cornerstone of special education since the inception of the Education for All Handicapped Children Act in 1975. The IEP describes the educational needs of a student, goals and objectives that promote positive student outcomes, educational programming and placement, and the evaluation

and measurement criteria that formalize the free appropriate public education (FAPE) for a student with disabilities (Yell, 1998).

Over the past three decades, the federal law governing special education has undergone several reauthorizations and revisions. During its most recent reauthorization in 2004, the law became PL 108-446, the Individuals with Disabilities Education Improvement Act, continuing to be known by the acronym of IDEA. In 1997 and again in 2004, provisions were added to strengthen the right of students with disabilities to a free appropriate education and ensure greater accountability for those students (Nolet & McLaughlin, 2005). The language of these new provisions clearly calls for an increased focus on the educational performance of students with disabilities and how that performance aligns with national standards of accountability (Skrtic, 2005). The changes that have resulted from these provisions strongly suggest that special education instruction must now be anchored in the general education curriculum.

Within Public Law 108-446, the most specific mandates related to the IEP are those that refer to the required statements of annual goals and short-term objectives for the IEP. Under 2004 regulations, the IEP provisions should address: a statement of the child's present level of academic achievement and functional performance; measurable annual goals; a statement of how progress toward annual goals will be measured; a statement of identified special education and related services, supplementary aids, and services; an explanation of the extent to which the child will not participate in general education classes; a statement of individually appropriate accommodations; and measurable postsecondary goals beginning at the age of 16 or after (Nolet & McLaughlin, 2005).

Historically, establishing annual goals and objectives has functioned as the determinate of student success in special education (Larsen & Poplin, 1980; Tymitz-Wolf, 1982). The model most often used in IEP development involved assessment of discrete skill deficits, the identification of student strength and weaknesses, and the development of remedial annual goals and objectives (Larsen & Poplin, 1980; Nolet & McLaughlin, 2005; Tymitz-Wolf, 1982). This type of instructional planning resulted in disjointed IEPs that were a collection of isolated skills that offered little or no relevance to the general education curriculum (Shriner & DeStafano, 2003). Presently, the task of instructional planning, including writing annual goals and short-term objectives, is one of ten standards of high-quality special educators developed by the Council of Exceptional Children (CEC, 2003).

Problematic Nature of the IEP

With that said, research has documented substantial problems with the IEP both as a process and a product (Dragslow et. al, 2001; Goodman & Bond, 1993; Huefner, 2000), suggesting an IEP is only as strong as it is compliantly written and effectively implemented. An examination of IEP research findings and position papers over the past thirty years reveals phases across research on the evolution of the IEP process (Huefner, 2000; Smith, 1990b). These phases included: a) research that described, detailed, and explained the concepts and provisions of the law; b) research that focused on teacher perceptions, parent involvement, and team approaches toward the IEP as a process; and c) a surge of research that investigated effective computer assisted systems to manage the IEP process and accompanying documentation (Smith, 1990). Huefner (2000) describes an emphasis on procedural compliance over the last two decades. However, the tone of

current IEP literature calls for research that investigates strategies that will facilitate teaching that ensures special education student access to the general education curriculum (Nolet & McLaughlin, 2005).

Embedded throughout the problematic nature of the IEP have been pedagogical problems associated with the provisions of the law that emphasize a link between specially designed instruction and the general education curriculum (Huefner, 2000). Specifically, the development of annual goals and measurable short-term objectives has come under analysis (Drasgow, Yell, & Robinson, 2001). Even prior to the 1997 reauthorization, a major outcome for a number of studies had been teachers' concerns about their skills in developing objectives (Keefe, 1992).

The purpose of goals and short-term objectives is to monitor educational progress and determine appropriateness of the special education program (Dragslow et al., 2001). When goals and objectives are correctly written, they enable teachers and parents with the necessary documentation to make educational adjustments as necessary (Deno, 1992). Given that the quality of IEP goals has been found to have a direct association with the integrity of services received by students with disabilities, descriptions of the complex tasks involved in the development of goals and objectives are well warranted.

Professionals in the field have questioned the validity and accuracy of the IEP (Keefe, 1992). Investigations of IEP goals have indicated that goals and objectives often lack clarity, completeness, data support, and relevance for specific needs (Shriner & DeStefano, 2003). Conclusions from research studies on IEP development include: a) the content of an IEP does not reflect actual instruction (Goodman, & Bond, 1993; Lynch & Beare, 1990; Smith, 1990a); b) there is often a lack of congruence between a student's

present level of performance and instructional goals and objectives (Reiher, 1992; Smith, 1990b); and c) goals and objectives are written without technical adequacy, instructional relevance, and alignment with curricular standards (Fisher & Frey, 2001; McLaughlin & Warren, 1995; Walsh, 2001; Yell, 1998).

A primary area of inquiry has included comparisons of IEP goals across specific categories of students (Giangreco, Dennis, Edelman, & Cloninger, 1994; Reiher, 1992; Smith, 1990a) For example, in comparing the IEPs of students with behavior disorders and learning disabilities, Smith (1990) identified differences in the number of annual goals and short-term objectives, and their representation of performance data.

IEP goals have been examined across special education settings (Espin, Deno, & Albayrak-Kaymak, 1998). Espin and her colleagues (1998) looked at differences in the written IEP goals for students in resource and inclusive programs. They found that there was a better concordance between actual IEP instructional goals and student ability level in resource programs than in inclusive programs.

In contrast, while analyzing the instructional relevance of IEP goals and objectives, Shriner and DeStefano (2003) concluded that correlations between what was documented on the instructional IEP goals and objectives and day-to-day implementation were highly variable. They also noted that although students' IEP goals and objectives appeared to reflect individualized instructional planning, logistical factors limited the utility of the IEP as an instructional tool and interfered with its actual implementation. These findings support a previous analysis of IEP goals and actual classroom implementation by Lynch and Beare (1990) where findings also indicated a low correlation between goals and actual delivery of instruction.

It has been suggested that conclusions drawn from prior research on the efficacy of the IEP goals and objectives strongly support the contention that, in the absence of linkage to the general education curriculum, IEPs will not be equipped to facilitate "educational benefit," thereby rendering them legally incorrect and educationally insufficient (Bateman, 1992, p.18). Foreshadowed by the No Child Left Behind Act of 2001 and IDEA 2004, IEP development will have to move beyond procedural compliance to fulfill the entitlement of access to the general education curriculum (Nolet & McLaughlin, 2005).

Instructional Planning of Goals and Objectives

Instructional planning is pivotal to IEP development and results in written annual goals and short-term objectives in an individualized education program. In the 2004 amendments of IDEA, the requirement of stated objectives or benchmarks was removed as a provision, the intent being a reduction in paperwork and establishing a more direct path towards alignment with state standards (Nolet & McLaughlin, 2005). Conclusions drawn from research continue to support the utility of objectives as a means of monitoring student progression (Codding, Skowron, & Pace, 2005). Described as the center of special education practice, instructional planning with regard to writing annual goals and objectives remain a requisite skill in the repertoire of special education teachers (CEC, 2003). Most importantly, the removal of required objectives has not been mandated by the majority of state education agencies. Therefore, special education teachers are still required to develop annual goals and short term objectives by the local education agencies in which they are employed.

Instructional planning is a complex process that involves a multitude of tasks. A detailed analysis of what instructional planning entails will be discussed in chapter three. A discussion of skills fundamental to instructional planning will include; a) how teachers interpret data sources; b) how they connect IEP goals and objectives to general education performance standards; and c) the elements of a technically adequate IEP goal and objective.

Data sources. A major component of instructional planning involves the interpretation of assessment data by special education teachers. Linehan and Brady (1995) examined the effects of assessment reports on the specific instructional planning decisions of 86 special education teachers. Participants were assigned randomly to receive a functional or developmental assessment report. They were asked to read the assessment report, develop five instructional objectives, complete a questionnaire, and participate in a debriefing interview.

Findings from the study did not support the utility of either assessment in yielding quality IEP objectives. Conclusions drawn by the researchers suggested that this owed in part to participants' overall skill in writing instructional objectives. Researchers indicated that there were participants in both groups who wrote objectives that varied from having strong technical adequacy to poor technical adequacy. They concluded that this suggested a continuing need to prepare teachers with technical skills needed for instructional planning.

Accessing general education curriculum. Effective instructional planning involves the ability to connect the identified goals and objectives to a standards based curriculum. This task requires special education teachers to demonstrate an integrated understanding

of general education curriculum standards, knowledge of subject matter content, and strategies for designing individually specialized instruction (Massanari, 2002; Nolet & McLaughlin, 2005). Consistency with this task has proven difficult for special educators (Nolet & McLaughlin, 2005). For instance, in a grounded theory qualitative analysis of how three special education students identified as having a significant cognitive disability (severe to profound mental retardation) accessed the general education curriculum, researchers identified a disconnect between instructional objectives and the curriculum (Fisher & Frey, 2001). They noted that although the IEP objectives were of reasonable quality in terms of age appropriateness, functionality, and potential generalization to other environments, they were not based on the performance standards accessed by other students in the class.

Technical adequacy of the IEP goal and objectives. Annual goals are statements that describe what the student can reasonably accomplish within a 12- month period. IDEA 2004 continues an emphasis on annual goals that are measurable, observable, and relate to present levels of academic performance. Best practices suggest writing goals with specificity and avoidance of broad, vague language (Youtsey, 2003). An objective/benchmark is the sequencing of smaller steps toward attaining the annual goal (Nolet & McLaughlin, 2005). In order for an annual goal and subsequent objectives to have technical adequacy they must identify: a) who is to demonstrate the behavior; b) the antecedent or conditions under which the observable behavior will occur; c) an overt observable behavior; d) the criteria of mastery; and d) what performance data will be used to determine if criteria of mastery are met (Youtsey, 2003).

In summary, the problematic nature of developing IEP goals and objectives is well documented in the literature (Rodger, 1995). The development of IEP annual goals and objectives has improved within the last decade under the regime of procedural compliance (Huefner, 2000). The new challenges presented by standards based reform make it incumbent upon special education teachers to develop comprehensive goals and objectives that will result in responsive instruction for students with disabilities (Nolet & McLaughlin, 2005).

Pedagogical Expertise and IEP Development

Based on the review of literature, an examination of factors related to instructional planning would prove beneficial in providing implications for the pedagogical development of special education teachers. While the literature suggests interplay between the expertise of special education teachers and its impact on their ability to plan instruction for students with disabilities, there is a lack of empirical evidence supporting the relationship (Stough, 2001). Teacher training and new teacher induction programs provide a strong mechanism for change in how special educators are taught to plan instructionally for students' individual needs. However, if induction programming is to be effective in moving teachers along a continuum of competence in the facets of special education, a well-conceptualized understanding of how expertise develops and a detailed description of the behaviors that constitute the domain specific task will be needed (Alexander et al., 2004).

As such, the purpose of this study will be to describe the instructional planning strategies and techniques used by special education teachers, who vary in level of teaching experience while they engage in the domain specific task of developing IEP

goals and objectives. Informed by a developmental model of expertise development, emphasis will be placed on the underlying knowledge bases and strategic processes demonstrated during task performance.

Chapter Three will pose a rationale for the design of this study; discuss what constitutes instructional planning during the development of IEP goals and objectives, and present guiding research questions. The methodological components of the study will clearly delineate the proposed implementation of the defined procedures.

CHAPTER III

METHOD

The overarching goal of this study was to examine performance during development of the individualized educational plan (IEP) for students with disabilities as a function of pedagogical experience among special education teachers. Qualitative methods were used to describe how special education teachers, categorized as more experienced and less experienced, differed in developing goals and objectives appropriate for a simulated student profile and how their differences aligned with the stages of expertise development proposed in the Model of Domain Learning (Alexander, 1997).

The purpose of this chapter was to: a) provide a rationale for the selected design of the study, b) present a task analysis of developing goals and objectives in the IEP framework, c) present guiding research questions, d) review findings from the pilot study, and e) discuss methodological components utilized in this study, including procedures used to establish trust and confidence in the research results of the proposed study.

Design of the Study

Qualitative research has been defined as a systematic approach to understanding qualities or the essential nature of a phenomenon within a particular context (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005). Qualitative designs are naturalistic in nature, attempting to capture the real life context of events and the way in which the complex variables of those events interact in the absence of control or manipulation (Isaac & Michael, 1997). As such, in naturalistic inquiry there is a reliance on human perception that is framed by the assumption of multiple realities (Fraenkel & Wallen, 2003). Use of a human observer as the primary instrument for data collection allows for

detection of subtleties in human behaviors that are being studied (Isaac & Michael, 1997). Puposeful sampling is particularly appropriate for qualitative studies because it is designed to identify information rich cases from which much can be learned about the issues that are central to the purpose of a specific study (Fraenkel & Wallen, 2003). In addition to being described as emergent, reflexive, and idiographic, the analysis used in qualitative methods is often categorized as inductive (Isaac & Michael, 1997). However, Brantliner and her colleagues (2005) argued that qualitative research could also be deductive, meaning it can be designed to document the phenomenon of study as opposed to discovering the essence of it.

Perhaps the principal limitation of qualitative approaches is the lack of methodological justification for generalizations or conclusions on causality (Fraenkel & Wallen, 2003). The purpose of qualitative studies is not generalization, but rather to document evidence that is substantiated by the study of specific phenomena within a specific context (Brantlinger et al., 2005). As such, replication of qualitative studies becomes the foundation for constructing collective bodies of evidence that would establish value in application to appropriate situations and contexts (Fraenkel & Wallen, 2003). Much like conventional research, careful consideration should be given to addressing quality indicators (Brantlinger et al., 2005) and meeting distinct criteria that establish the degree to which the findings are credible, transferable, dependable, and confirmable (Isaac & Michael, 1997).

Contrary to assumptions that qualitative inquiry is a new genre in the field of special education, Brantlinger and her colleagues (2005) pointed out that qualitative designs have produced scientifically-based evidence that has informed policy and

practice in special education. The National Research Council's call for research that produces descriptive or procedural knowledge has resulted in qualitative exploration of the attitudes, opinions, and beliefs of the special education community across a continuum of special education contexts (Shavelson & Towne, 2002). Descriptive qualitative research has been recommended as an effective first step in research agendas that focus primarily on practice effectiveness using randomized experimental group designs or randomized clinical trials (RCTs), (Odom, Brantlinger, Gersten, Horner, Thompson, & Harris, 2005).

The current study was conducted by using qualitative methods to describe how more experienced and less experienced special educators develop IEP goals and objectives. Specifically, more and less experienced special education teachers participated in a one-hour verbal protocol procedure while engaging in the explicit task of developing an IEP for a simulated student profile.

Given the complexity of the task, qualitative methodology was particularly well suited to document what states of knowledge and strategic processing teachers use in the development of an IEP goal and objective, as well as to highlight the existence of influential factors that arise from the unique school settings and dynamics in which this task occurs. Further qualitative techniques also help to define participant perceptions and the role of these multiple realities in the implementation of the process.

Task Analysis: Development of IEP Goals and Objectives

In order to understand the intricate components involved in the decision making process for developing IEP goals and objectives, it is important to provide a detailed analysis of the task was conducted. The process outlined is not intended to address all

forms of planning involved in IEP development, but rather focuses on instructional planning that directly links IEP goals to general education curriculum standards (Nolet & McLaughlin, 2005). A description of the essential decision points involved in this form of planning is provided in order to understand how to interpret the instructional relevance of IEP goals and objectives.

The task analysis is discussed according to: a) consideration of all sources of data, b) identification of a student's present level of academic performance, c) determination/identification of type of IEP goals and supports, and d) anatomy of IEP annual goals and objectives.

Data Sources

The consideration of data sources marks the inception of any IEP decision-making process. This collection of data is aimed at answering questions concerning inferences about a particular student's performance and progress (Nolet & McLaughlin, 2005). There is no single standard assessment battery that would prompt valid planning and instructional decision-making. The data sources should be generated from multiple measures that should be classroom based and reflective of authentic performances, in addition to formal assessments (Nolet & McLaughlin, 2005). These multiple measures should include samples of student performance across a variety of contexts that are related to the areas of concern.

The heightened focus on access to the general education curriculum has rendered present inventories of deficit skills obtained from standardized assessments insufficient. Instructional assessments used for developing IEP goals and objectives must be linked to general education curriculum goals that are aligned with state standards (Nolet &

McLaughlin, 2005). This approach allows for decision-making that is based on a more complete snapshot of student performance (Fuchs, Mock, Morgan, & Young, 2003; Nolet & McLaughlin, 2005).

Present Level of Performance

Once a valid body of evidence has been collected, a determination must be made of the student's present level of academic achievement and functional performance in the general education curriculum (Nolet & McLaughlin, 2005). Extensive knowledge of the general education curriculum is vital to an appropriate determination of present performance. During the IEP process, the presence of a general education teacher is required to provide that necessary level of curricular knowledge. However, special educators need to have an in-depth understanding of the general education curriculum scope and sequence in order to construct a roadmap of where the student is, where the student needs to go, and how to get that particular student there, based on his or her specific needs. Nolet and McLaughlin (2005) suggested that an appropriate determination requires a three-phase process that involves identifying grade level standards, subject matter performance goals, and where the target student falls on a continuum of accessibility.

The first phase of grade level standard identification requires special education teachers to have an in depth knowledge of the interrelations between the components of the intended curriculum in order to identify grade level expectations across subject matter curricula (Nolet & McLaughlin, 2005). Knowing the differences between standards, benchmarks, and indicators will aid in the translation of general education curriculum guides.

The second phase of this process narrows the focus to what a proficient level of student achievement entails (Nolet & McLaughlin, 2005). This phase requires special educators to understand the prerequisite knowledge, skills, and processes needed to demonstrate proficiency in using core knowledge. While this phase is similar in nature to the process of task analysis, it is not hierarchical and tends to focus more on the final outcome rather than the subcomponents of basic skills (Nolet & McLaughlin, 2005).

Once it is determined what a student should be learning, a decision has to be made concerning how the student is currently performing academically. This decision should consider the ways in which his or her disabilities impact performance, for example, examining his or her ability to focus on instruction, attend to tasks, and organize written and spoken thoughts. In effect, identification of the student's present level of academic performance clearly defines a starting point in the general education curriculum. By making a comparison between a student's current performance and expected learner outcomes, special education teachers can determine the areas of critical need, which sets the stage for determining what instruction the particular student will require in order to attain proficiency (Nolet & McLaughlin, 2005).

Types of IEP Supports and Goals

At this point in the decision making process, the focus now shifts to identifying the level and type of supports needed in an effort to progress towards proficiency. As a special educator moves through the process of developing an appropriate IEP goal and objective, careful consideration of where a student falls on the continuum of curriculum access is needed (Massanari, 2002). This continuum ranges include ability to access grade-level curriculum with no accommodations; grade-level curriculum with

accommodations; modified (off grade level) curriculum; or alternate achievement standards (Massanari, 2002; Nolet & McLaughlin, 2005; Youtsey, 2003).

This part of the decision-making process requires teachers to be able to differentiate curriculum content from instruction and know the differences between accommodations and modifications. It also helps to establish whether goals and objectives are needed. Only when a general education content standard is modified, or an alternate achievement standard is needed, should IEP goals and objectives be developed (Nolet & McLaughlin, 2005). If the determination is that a student will be able to demonstrate the same level of achievement on the same content standards as his or her non-disabled peers, with or without accommodations, then no IEP goals should be developed. However, this scenario does require a clear description of identified supports, accommodations, and individuals responsible for the implementation documented in the IEP.

Anatomy of IEP Goals and Objectives

While the mandate of IDEA 2004 emphasizes measurable annual goals and the subsequent documentation of sufficient progress, the requirement of including objectives or benchmarks was removed, except for a small percentage of special education students who will access alternate achievement standards (Codding, Skowron, & Pace, 2005). Research, however, supports the utility of observable and measurable instructional objectives in tracking student academic progress (Rodger, 1995). As the foundational component, the annual goal should be an identified long-term target that is expected from instruction and can be reasonably attained over a span of one instructional school year (Nolet & McLaughlin, 2005). Traditionally, past practices of IEP development resulted in

annual goals where the specific skill deficits and objectives usually led to isolated instruction (Shriner & DeStefana, 2003). Often producing fragmented learner expectations, this approach to goal writing does not facilitate the type of learning students with disabilities will have to demonstrate in order to access the general education curriculum (Nolet & McLaughlin, 2005).

As such, the anatomy of IEP annual goals and objectives should be inclusive of components that are technically adequate and instructionally relevant (Rodger, 1995). Technical adequacy involves the degree to which an IEP goal and objective is reasonably calculated to benefit an identified student (Menne, 2002). A technically adequate annual goal must identify a content area impacted by the disability and the instructional level, which should be reflective of the student's present level of performance (Menne, 2002; Nolet & McLaughlin, 2005; Rodger, 1995). A technically adequate objective or benchmark should delineate the following: a) the learner; b) the target behavior; c) the conditions under which the learner should perform the behavior; and d) the criteria for acceptable performance (Mager, 1997; Nolet & McLaughlin, 2005).

The instructional relevance of an IEP goal and objectives, or benchmarks, reflects the level of congruence between the identified present level of performance, data sources, and the proposed annual goal and objective (Menne, 2002; Reiher, 1992). For example, whereas a technically adequate annual goal would identify the content area addressed by the goal, the degree to which that content area is connected to the present level of performance and supported by existing data sources would determine the instructional relevance of a particular annual goal. By the same standards, there should be an explicit continuity between the objective, annual goal, present level of performance, and most

importantly, the general education curriculum (Codding et al. 2005; Massanari, 2002; Menne, 2002; Nolet & McLaughlin, 2005; Rodger, 1995; Tymitz-Wolf, 1982).

It is important when assessing IEP goals and objectives to understand that technical adequacy and instructional relevance are not mutually exclusive. A procedurally correct goal and objective would not be technically adequate in the absence of being instructionally relevant, which is what finally renders the goal and objective reasonably calculated and educationally beneficial (Menne, 2002).

Guiding Research Questions

Framed by the literature review presented in the previous chapter, initial research questions were developed to guide the description of how more experienced and less experienced special education teachers develop IEP goals and objectives for students with disabilities.

1) In what ways will less experienced and more experienced special education teachers differ in the forms of knowledge that they demonstrate, and the types of strategic processing used, during the task of developing IEP goals and objectives?
2) In what ways will the written IEP goals and objectives developed by less experienced and more experienced special education teachers differ in the degree of:
    a. Technical adequacy (antecedent, behavior, and criteria)?
    b. Congruency (connectedness between the present level of student performance PLOP, goals, and objectives)?
    c. Instructional relevance (scope is appropriate, objectives are written in hierarchical and sequential order)?

d. Curriculum alignment (accesses general education curriculum outcomes)?

3) In what ways will less experienced and more experienced special educators differ in their levels of interest and professional involvement in the field of special education?

4) In what ways will the demonstrated knowledge states and strategic processes of more experienced and less experienced special education teachers engaging in the domain specific problem-solving task of IEP development align with the stages of expertise development predicted by the Model of Domain Learning?

Pilot Study

A pilot study was conducted to establish the suitability of the materials and IEP development task. Specifically these items were field-tested with one experienced special education teacher. The participant for the pilot study was a volunteer. Having taught as a certified resource teacher for 15 years, she met the criteria for the more experienced teachers.

A think aloud protocol was audiotaped and videotaped. Additionally, an observation form (See Appendix I) was used to a) document time allotment for each part of the data collection session, b) write field notes about participant behaviors, and c) track the frequency of use for each colored section of the simulated student confidential file. The observation form also aided in matching observed behaviors with participant verbalizations. Data collected from the pilot study were transcribed and coded.

Logistics. Logistical concerns were also a focus for the pilot study. The correct usage of the equipment, time allocated for each activity, and location had a direct impact on the flow of the data collection session. Also, during the think aloud protocol, the participant

requested a blank sheet of paper to take notes on. The initial time allocations for the pre-task questionnaire, instructions, and both practice think aloud activities were in excess of the actual time needed by more than 4 to 6 minutes.

During the session an observation form was used. I was able to document the frequency of use for each colored section of the simulated student confidential folder. The participant reviewed the contents in the order they were presented in.

Preliminary coding scheme. Based on the Model of Domain Learning (Alexander, 1997) and specific coding categories used by Azevedo and Cromley (2004), a preliminary coding scheme was developed for this study. Using these classifications, four coding categories and 25 subcategories were identified. The coding scheme is presented in Table 3.1. The coding subcategories were taken from the transcription of the pilot study think aloud protocol.

Changes Resulting from Pilot Study

As a result of conducting the pilot study, preliminary themes relating to research questions were identified. These themes served as the basis to develop the initial coding categories that were applied to the verbal protocols of each participant. Additionally, I found that ample time for equipment set up was necessary to ensure data collection sessions started at the scheduled time. An adjustment was made in the presentation of materials. The materials were spread out in random order in an effort to detect any differences in how the materials were reviewed. A blank sheet of paper was added to the participant materials packet for note taking. Because time allocations were in access of actual time needed, I reduced the range of time to complete all activities by 4 minutes. The observation form was found to be effective in gathering the same types of

information captured by the videotaping. As a result, the think aloud protocol for each participant was audio recorded in conjunction with using the observation form, in lieu of videotaping.

Participants

Three special education teachers identified as less experienced and three special education teachers identified as more experienced, all from the same large urban school district, were participants for this study. Experience was defined operationally as years of documented professional practice.

School District/Local Education Agency

All participants were employees of a large urban school district located on the outskirts of a major metropolitan city in the Mid-Atlantic Region of the United States. At the time of this study, it was ranked one of the 20 largest school districts in the United States. The school district employed 10, 632 teachers, 78.5% of whom have a master's degree or equivalent. The district's Department of Special Education Services reported 17,013 students receiving special education services across a continuum of placements.

Resource as a Placement and a Service

For this study, resource is defined operationally as special education services provided to students in kindergarten to grade 12 who had been identified as meeting eligibility criteria under the Individual with Disabilities Education Act (IDEA). Students who receive services in a resource placement typically demonstrate learning and/or behavioral needs that affect performance in one or more academic areas. In their employing school district, the participants provided resource services as direct daily

Table 3.1

Preliminary Coding Scheme

Coding Category	Coding Subcategory
Planning	
Reading contents of the file	*identifying key points about the students performance
Task definition	*defining what needs to be done
Procedural explanation	*explanations of what normally happens when engaging in this task
Prior knowledge activation	*searching memory for relevant information (similar cases)
Generating ideas	*note taking/verbalizations that indicate possible goals/objectives
Monitoring	
Monitoring content	*analyzing data from reports
Strategy identification	*identifying a strategy that will be used to develop goals and objectives.
Giving comments	*verbalization of a comment that is not reflected in the permanent product
Self-questioning	*posing a question at various points in the presented content
Reviewing	
Rereading content	*rereading any portion of the materials *rereading each report in isolation *rereading sections across reports
Evaluating content	*critiquing the relevance of the data identifying evidence of validation across reports

Revisions	*making actual revisions to permanent product

IEP Development

Writing an annual goal	*cross references the reports to develop a goal
	*cross references the curriculum guide to develop a goal
	*cross references the present level of academic performance to develop a goal
Writing objectives	*objective written in curriculum guide language verbatim
	*objective references general education curriculum standards by reference number only
	*objective reflects general education curriculum standards language/ref. number

instruction or on a consultative basis. Hours of service range from 1 to 10 hours of instruction per week. A variety of instructional models and strategies may be used to meet individual student needs. These include, but are not limited to, pull out programs where students are taken out of a general education setting and instructed according to the IEP in a classroom with a resource teacher; plug in programs where a resource teacher goes into a general education setting to provide instruction according to the IEP; or as collaborative consultation between the resource teacher and general education teacher who implement instruction according to the IEP and track student progress.

Participant Selection

Researchers have recommended using a two-gate identification process for participant selection that clarifies screening markers such as years of experience and performance indicators that could be gathered through a confirmatory-nomination process (Palmer, Stough, Burdenski, & Gonzales, 2005). Initial plans for the present study included a nomination process. However, the local education agency in which the participants are employed did not agree to any type of confirmation or nomination process. Given the reluctance of the LEA to comply with this participant selection process and the time constraints of the proposed study, the participants who met the criteria for more and less experienced were asked to volunteer for the study. The chosen sample was not expected to be representative of the total population of special education teachers, but rather to possess pertinent information about the phenomenon of inquiry.

More experienced special educators. The category of more experienced special education teachers was defined operationally as teachers who a) have 10 years or more of teaching experience at the elementary level instructing students identified as having a

disability in a resource room setting and b) hold a state professional certification in special education.

Less experienced special educators. The category of less experienced special education teachers was defined operationally as teachers who have a) one to two years of teaching experience with elementary level special education students identified as learning disabled in a resource room setting and b) hold a state provisional or professional certification in special education.

Consent and descriptive information. All participants received an introduction letter (see Appendix A) and an informed consent letter that a) stated the purpose of the study, b) explained the provision for their voluntary termination at any point during the course of the study, and c) secured a signature reflective of their informed consent (see Appendix B).

A pre-task questionnaire (see Appendix C) was completed to document information pertaining to each participant's demographics, certification track, teaching experiences, and level of professional interest. Each participant profile is presented in Table 3.2. Approximately 3 to 5 minutes was allocated to complete this task. The questionnaire consisted of 23 questions. The first 11 items addressed demographics and job related background information. The questionnaire was developed specifically for the purpose of this study. Data collection for this section included participants' a) gender, b) ethnicity, c) certification track (traditional/alternative), d) teaching assignment, e) length of current teaching assignment, and f) years of teaching experience (see Appendix C).

In a study conducted by Alexander and her colleagues (2004), a 13-item measure was developed to gauge the interest and involvement of participants in a range of job

Table 3.2

Participant Profiles

Participant Pseudonym	Years of Professional Practice	Certification Track	Type of Certification
Maria	12 years as sp. ed. resource teacher	4 year college Master's degree	Prof.
Marci	15 years as sp. ed. resource teacher	Lateral Entry Master's degree	Prof.
Mona	18 years as sp. ed. resource teacher	4 year college	Prof.
Lisa	1st year sp. ed. resource teacher	4 year college	Prof.
Lori	2nd year sp. ed. resource teacher	Lateral Entry Master's degree	Prof.
Lucy	1st year sp. ed. Resource teacher	Lateral Entry	Prov.

Note: Prof. indicates professional certificate. Prov. indicates provisional certificate Lateral Entry is defined as a person with a bachelor degree in a related field, having little or no experience with teaching special education students and may or may not have taken any related educational coursework.

related activities. A factor analysis of the measure resulted in the extraction of two factors from the original 13-item measure (Alexander et al., 2004). Eight items loaded solely on the first factor of general interest that was conceptually related to the construct of situational interest ($\alpha = .89$). Four items loaded on the second factor of professional interest that was conceptually related to the construct of individual interest ($\alpha = .89$). For the purposes of the present study, a modified version of Alexander's interest measure was used. Specifically, the eight items related to situational interest and the four items related to professional interest from the original measure were used. The only modification was the omission of one item ("Made a donation to a charity serving the special needs population"), as it did not load on either factor in the factor analysis from Alexander's original study (Alexander et al., 2004).

Materials

Participants received a packet of materials. These materials included a simulated student case file and a kindergarten through third grade level general education curriculum guide. The different components of the student file (see Appendix F) were color coded. These included the following: a) student vignette (orange); b) psychological assessment report (yellow); c) speech and language assessment report (green); d) educational assessment report (pink); e) IEP present level of performance (blue); and f) curriculum guide K-3 (white). The color-coding allowed for tracking the usage of each component on the observation form during the think aloud protocol. Moreover, teachers were provided with one sheet of blank paper to take notes and a blank IEP form to write the developed goal and objectives.

Simulated Student Case File

During each data collection session, the participants were provided with a simulated special education confidential student file. This file was developed specifically for the think aloud protocol. A vignette of a fictitious third grade student was created to include a range of academic and behavioral needs typical of a specific learning disability. The same case file was used with each participant. The file included all paperwork required by the LEA and federal statutes governing the identification and evaluation of a student who is suspected of having a disability. This paperwork was reflective of the referral process used in the participating LEA and included documents compiled from the following sources: a) educational management team (EMT) meeting, b) screening IEP meeting, c) assessment reports from recommended evaluations, and d) documentation of the present level of performance (IEP page 1).

Curriculum Guides

The participating local education agency (LEA) used a series of grade level curriculum guides to provide teachers with a scope and sequence for instructing students across content areas in general education curricula. For special education teachers, these guides were used to help them generate IEP goals and objectives that are linked to the general education curriculum. There was a curriculum guide for each grade and grading quarter across four content areas for a total of 16 guides per grade level. The curriculum framework provided a compilation of the grade level scope and sequence indicators across content areas. Specifically, each participant was provided a copy of the curriculum framework for pre-kindergarten through grade 3 (available upon request). The

framework content areas included English/Language Arts, Mathematics, Science, and Social Studies.

Procedure

This section includes descriptions of: a) the data collection sessions, b) the practice think aloud activities, c) the think aloud protocol, and d) the follow-up interview procedures.

Data Collection Sessions

Data collection sessions were conducted at a location convenient for the participants. I facilitated the data collection sessions individually. Prior to each session, each participant received an interest letter and gave her consent for participation in the study (see Appendices A & B). Each session included the following activities: a) pre task questionnaire; b) practice think aloud activities; and c) think aloud protocol. An individual follow up interview was conducted one week after the initial data collection session. Each think aloud protocol and follow up interview was recorded with an audiotape recorder. Further, emails and phone conversations were used to answer additional questions resulting from the analysis of the transcription.

Practice Think Aloud Activities.

After completing the pre-task questionnaire, each participant practiced two think aloud activities (see Appendix E). Directions for the practice activities were distributed (see Appendix D). The following instructions were read and also presented in written form to the participants (see Appendix D). For the practice task the instructions were

> " In this study I am interested in what you think to yourself as you perform certain tasks you will be given today. In order to understand how you are thinking during

your task, I will ask you to think aloud as you work on the problems. What I mean when I say think aloud is that I want you to say out loud everything that you think to yourself silently. If you are silent for any length of time, I will remind you to keep talking. Do you understand what I want you to do?"

Following the instructions, participants engaged in tasks to familiarize themselves with giving detailed descriptions about their actions and thoughts while completing a task. The tasks consisted of having the participants first think out loud while solving a two-digit multiplication problem, and then think out loud while solving an anagram. The two-digit multiplication problem was presented orally and participants performed the operation with no paper and pencil. For the anagram activity, a card with scrambled letters was shown to each participant. The task required her to find an English word that consisted of all the presented letters. Approximately 5 to 10 minutes were allocated for this activity.

Think-Aloud Protocol

Once participant questions concerning the think-aloud technique had been addressed, the participants received the simulated confidential student file, the curriculum guides, IEP goal and objective forms (see Appendix F) and additional written directions (see Appendix D) to complete the think aloud protocol. For the think aloud protocol, the instructions were

"You are being presented with a simulated student confidential file, which contains all documents pertaining to the student's academic profile and the identification of any disability that may be impacting school performance. The student's present level of performance is provided for you, as well as identified

strengths and areas of need. Your task is to prepare a draft IEP goal in the content area of reading as if you were preparing for an evaluation meeting. You should review the documentation, and, based on the provided data, develop one annual goal and the appropriate objectives/benchmarks that will lead to mastery of the annual goal. I am requesting that you develop an IEP goal and subsequent objectives/benchmarks that are what you would consider to be reasonably calculated and educationally beneficial to the targeted student. You may use any documentation from the simulated file as well as the curriculum guides to aid you in this task. I am asking you to 'think aloud' continuously while you engage in this task. Please remember that is very important to say everything that you are thinking while you are working on this task."

Additionally, a blank sheet of paper was included in the packet in case participants wanted to take notes. Each participant was then asked to a) review the contents of the file, b) develop an appropriate annual goal, c) generate instructional objectives that support the annual goal, and d) discuss any information needed (if necessary). Participants were reminded to "think aloud." If a participant was silent for more than 30 seconds at a time, a reminder to "think aloud" was given.

All participants were allowed as much time as needed to complete the think aloud protocol.

Follow-Up Interview

The follow-up interview (see Appendix H) was formulated to provide insight into the perceptions of participants on IEP development. The data generated by the interview aided in establishing credibility by providing rich dialogue and triangulation of

data. Open-ended questions were asked of the participants in an attempt to create a discussion rather than elicit abrupt answers. Participants were able to clarify differences between the simulated IEP development task and IEP development in practice. In addition, participants were asked what motivates them to develop procedurally correct goals and objectives, as a means of gauging their interest. The aim of this question was to gain insight into how much of what they do in IEP development is reflective of professional interest and/or situational interest.

All follow up interviews were conducted at a site convenient for the participant. Each participant felt the classroom environment would provide less privacy and more distractions. Although each site was different, all interview sites were private, comfortable, and provided both the participant and the researcher a relaxing environment in which to engage in candid conversations about participants' belief systems and practices pertaining to IEP development. Each interview ranged from 45-60 minutes in length. The follow up interviews often went beyond the constructed questions, allowing participants to fully express their meanings, perceptions, and beliefs. The dialogues within these interviews were natural and conversational in nature. Probing and repeated questioning were continuously used throughout the interviews until the researcher believed that everything necessary was conveyed (Miles & Huberman, 1994).

Data Analysis

The analysis of the data collected during the think aloud protocol and the follow-up interview included: a) the development of a coding scheme for all participant verbalizations, b) scoring of the permanent products, and c) aligning participant

characteristics according to the profiles of development predicted by the Model of Domain Learning.

Coding of Data

All participant verbalizations were audio recorded during the think aloud protocol and the follow-up interview. All verbalizations were recorded on a Maxell standard UR-90 cassette, using a portable Sony cassette-recorder player. Additionally, an observation form was used during the think aloud protocol to document frequency and order of usage of materials. Using the standard transcription conventions (Bracewell & Breuleux, 1993) presented in Table 3.3, the data were transcribed by a third party within a week of being collected. These conventions served as a tool to ensure that the accuracy of lexical and syntactic structures was maintained (Azevedo, 1997). A word document was created for the transcription of each participant's verbalizations.

To verify the accuracy of the transcriptions, comparisons were made between the word document and the audiotape of each participant (Miles & Huberman, 1994). This comparison allowed for the identification of transcription errors that were highlighted using double parentheses. In general, errors were infrequent. The errors consisted of omitted fillers (uh, um) and two instances where the participant revised an utterance during the course of production. Subsequent corrections were made to the word document as needed.

Once the verbal protocol data were transcribed and checked for accuracy, a coding scheme was further developed. To accomplish this, the transcription word documents were printed, tripled spaced, and cut into sections. Each slip was grouped according to interrelated ideas presented in the verbal data and color-coded in relation to

Table 3.3

Transcription Conventions

Mark	Significance	Example
.	Period: Used with utterances having normal (falling) intonation	I will look at this first.
?	Question mark: Used in interrogative (rising) intonation	Did they do a BASC?
!	Exclamation point: Used with exclamatory (sharp rise at end of word) intonation	Wow, Johnny has a full scale score of 110!
::	Colon(s): Used to indicate prolongation of syllables	that's really**::** a problem
…	Multiple periods: Used to indicate pause by speaker	I'm looking for…no its
xxx-,	Hyphen plus comma: Used for utterances that are revised in the course of production	he had about a 2 SD**-,**
((xxx))	Double parentheses: Used where transcription may not be accurate	((uh)) first I will

From: Bracewell, R. J., & Breuleux, A. (1993). Substance and romance in analyzing think-aloud protocols. In P. Smogorinsky (Ed.), *Speaking about writing: Reflections on research methodology* (pp.55-88). Newbury Park, CA: Sage.

the stages of expertise development described in the MDL.

This coding process allowed for clustering of commonalities among raw data. Transcriptions were read and re-read multiple times for reflection and critical examination, assuring appropriate coding. The emerging themes were constructed based on the theoretical model of expertise development (Alexander, 1997), the task analysis of IEP development (Menne, 2002; Tymitz-Wolf, 1982), and preliminary data from the pilot study. These themes were foundational in initial coding categories that were applied to the verbalizations of each participant.

Through the course of the study, the initial data codes went through a reiterative process of refinement as new coding themes emerged. For instance, any categories with minimal data were collapsed or, with sufficient information, new data codes were created. The final coding scheme is presented in Table 3.4. Once it was distilled, the researcher coded all transcripts, with 30 % independently recoded by a second coder in order to establish interrater reliability. The second coder had no knowledge of the purpose of the study. The coding scheme was explained, demonstrated, and practiced with the second coder using the pilot study transcript. The second coder coded one protocol from each participant group independently. Interrater agreement was .92 and was determined by dividing the number of agreed upon codings by the total number of codings.

Scoring of Permanent Products

IEP permanent products. Participants' IEP goals and objectives were rated by three judges with extensive knowledge of current laws, regulations, and compliance issues pertaining to IEPs for students with disabilities. A licensed school psychologist, an

area special education supervisor, and a school-based special education coordinator were asked to participate in the study. An orientation meeting was held with the three judges to familiarize them with the evaluation criteria. During individual meetings, each judge was given IEP goals and objectives to practice rating with the IEP rubric (see Appendix G) developed for this study.

The IEP rubric was used to determine the technical adequacy and instructional relevance of each participant's annual goal and objectives. The rubric consisted of 11 items. The total possible score was 22, which included 5 items scored with a 0-2 scale, 3 items scored with a 0-3 scale, and 3 items assigned a score of 0 or 1. Each judge practiced using the IEP rubric on three generic IEP goals and objectives. I developed generic IEPs based on common weaknesses identified in the literature on IEP development (Dragslow, Yell, & Robinson, 2001; Goodman & Bond, 1993; Huefner, 2000; Nolet & McLaughlin, 2005; Youtsey, 2003). The generic IEPs were developed to use as samples for the assignment of three classification ratings: gold standard (score 19-22); adequately developed (score 11-18); and poorly developed (score 0-10). The point ranges corresponded with quality indicators of goals and objectives that are considered to be reasonably calculated and educationally beneficial in the literature (Alberto & Troutman, 2003; Nolet & McLaughlin, 2005). The "goal standard" example included a goal and objectives that represented all four quality standards: technical adequacy, congruency, instructional relevance, and curriculum alignment. The "adequately developed" example included a goal and objectives that minimally addressed some aspect

Table 3.4

Coding Scheme for Verbal Data

Theme/Coding Category	Coding Subcategory	Initial Codes
Planning		
Reading contents of the file	*verbatim reading of the file, minimal verbal about the content	Rdg
	*verbatim rdg. w/ identifying key points about the student data	Rdg1
Task definition	*defining what needs to be done	TD
Procedural explanation	*explanations of what normally happens when engaging in this task	ProEx
Prior knowledge activation	*searching memory for relevant information (similar cases)	PKAct
Generating ideas	*note taking/verbalizations that indicate possible goals/objectives	Gidea
Monitoring		
Monitoring content	*isolated analysis of data	Monconis
	*integrated analysis of data	Monconin
Strategy identification	*identifying a strategy that will be used to develop goal and objective	Stratid
Giving comments	*verbalization of a comment that is not reflected in the permanent product	Verbals
Self-questioning	*posing a literal question at various points in the presented content	SelfQ-L
	*posing a higher level question at	

	various points in the presented content	SelfQ-H
Reviewing		
Rereading content	*rereading any portion of the materials	Rdga
	*rereading each report in isolation	Rdgc
	*rereading sections across reports	Rdgp
Evaluating content	*critiquing the relevance of the data identifying evidence of validation across reports	Evlc
Revisions	*rereading final product as a review	RRrev
	*making actual revisions to permanent Product	ActRev
	*posing possible revisions to be made during IEP meeting	PotRev
Interest		
District Criteria	*define district expectations; job descrp; obsv/rev.	Job
Prof. Development	*attendance of mandatory prof. develop.	Prfdev
Advocacy	*discuss student's right to FAPE and/ or parental rights/support	Adv
Federal Guidelines	*discuss federal laws/regs, attendance to conf; membership local chapters	Fedreg
Education	*pursuit of graduate studies	Edu
IEP Development		
Writing an annual goal	*cross references the reports to develop a goal	AGCRA

	*cross references the curriculum guide to develop a goal	AGCRC
	*cross references the present level of academic performance to develop a goal	AGCRP
Writing objectives	*objective written in curriculum guide language verbatim	ORlang
	*objective references general education curriculum standards by reference number only	ORnum
	*objective reflects general education curriculum standards language/ref. number	OLN

of the four quality indicators. The "poorly developed" example included a goal and objectives that did not represent any component of at least one of the four quality indicators. It took two sessions of practice with the rubric before reaching an acceptable level of reliability. Judges had some difficulty rating the degree to which objectives reflected a hierarchical and sequential order. Clarification of what constituted hierarchical and sequential order of the developed objectives was provided at the second practice session. After reaching 90% interrater reliability, each judge then rated the IEP goal and objectives for all 6 participants.

12-item interest measure. On the pre-task questionnaire, participants indicated their level of interest in a range of activities relevant to the field of special education on 12-items (see Appendix C). The participants placed an X on a continuum ranging from *very rarely (1)* to *very often (10)* for each of the listed activities that related to the two constructs of interest. Participants also were able to mark a response of *non-applicable* (0) to indicate that they had never participated in the named activity. Each response to the eight items related to general interest was assigned an individual score of 0 to 10 (maximum score = 80). Each response to the four items related to professional interest was assigned an individual score of 0 to 10 (maximum score = 40).

Alignment with the Developmental Profiles of the MDL

A major purpose of this study was to examine participant behaviors during the domain specific task of IEP development and determine if these behaviors aligned with the profiles of expertise development in the Model of Domain Learning (Alexander, 1997). This model suggested that interactions between knowledge levels, strategies used,

and degrees of interest would be represented differently across three progressive stages of expertise development, namely acclimation, competency, and proficiency.

Evidence of profile alignment from the think aloud protocols was triangulated by data from the think aloud protocols, follow up interviews, and permanent products. Once all the data were coded, they were cross-analyzed with the stages of development in the MDL, resulting in the codes presented in Table 3.5. The data for each participant were recoded and an alignment checklist (see Appendix J) was used to compile all MDL codes across each stage of development.

Acclimation stage. Within the acclimation stage of development, knowledge is limited and fragmented. Learners in this stage often exhibit a lack of linkage between topic and domain knowledge (Alexander, 1997). For instance, a participant may verbalize a statement that indicates he or she has some knowledge of reading as a content area as well as knowledge about special education mandates, but lacks knowledge of the general education curriculum, which would result in an IEP goal and objectives that may contain isolated skills. Also in this stage of development, it is difficult for a special educator to discern the relevancy of information in relation to the actual IEP goal and objectives. As a result of this fragmented knowledge, learners at this stage predominately rely on surface level strategies to make sense of the information and data they use to develop the content area IEP goal and objective. Participants at this level typically will be motivated to develop goals and objectives because of situational interest, meaning their motivation is dependent upon factors such as presentation of goals at an IEP team meeting, compliance checks, or administrative performance reviews.

Table 3.5

Cross Analysis of Categories and Model of Domain Learning

Theme	Coding Categories	MDL Codes
Knowledge	*verbatim reading content of file with minimal verbals about the content, no linkages between reports	KnoACC
	*verbatim reading content of file with commenting on key points about student performance	KnoCOMP
	*reading content of file with commenting on key points about performance, defining task, critiquing data, searching for validation across reports (relationships)	KnoPROF
Strategic Processing	*any surface level strategy used to make sense of the text (note taking of irrelevant details, rereading verbatim, defining unknown terminology or references	StraACC
	*verbals about similar cases; paraphrasing; clarifying a mental representation of the student	StraCOMP
	*identification of inconsistencies; posing questions; ability to circumvent limitations of data;	StraPROF

Interest	*statements related to job requirements at a district level, administrative observations/rev.	InACC
	*statements related to compliance; advocacy; mandatory professional dev.	InCOMP
	*statements related to Fed regs.; litigation; state/national conferences; pursuit of graduate studies in the field	InPROF

Competency stage. A foundational body of domain knowledge, which is cohesive and principled in structure, marks the transformation into the stage of competence (Alexander, 2003b). As learners in this stage become increasingly familiarized with problem solving typical of the specific domain, they more often demonstrate an application of both surface level and deep-processing strategies. Special educators at this stage are often able to develop an IEP that may address components of procedural compliance, but their knowledge may or may not be integrated enough to facilitate access to the general education curriculum.

Proficiency/expertise stage. This stage is characterized by a broad knowledge base. Learners at this stage are well versed in problems and methodologies common to the domain that enable them to engage in problem finding (Alexander 2003b). This means that a special educator at this stage would not only review assessment reports in the planning process, but also would be able to pose questions concerning the relevance of the data. Normally, learners at this stage have a repertoire of strategies and are highly motivated by a professional interest in the domain, allowing them to engage in domain specific tasks over extended periods of time.

Validity and Reliability

"Rigor in qualitative research derives from the researcher's presence, the nature of the interaction between the researcher and participants, the triangulation of data, and interpretations of perceptions, and rich, thick description" (Merriam, 1998, pg. 50). While subjectivity and interpretation are often excluded from conventional methodology, qualitative researchers operate under the premise that these constructs are inevitably interwoven into every research project (Auerbach & Silverstein, 2003). In qualitative

studies, reliability and validity are representative of the philosophy behind naturalistic inquiry (Isaac & Michael, 1997; Schmidt, 2005). As such, their characterization is distinctly different from conventional forms of research. In qualitative inquiry the establishment of dependability ensures that, within reason, findings are consistent with those from similar studies or are equivalent to the conventional criteria of reliability (Issac & Michael, 1997). Credibility, on the other hand, determines the extent to which the findings and the methods used to capture those findings are believable and convincing, and is equated with the conventional criteria of validity (Auerbach & Silverstein, 2003).

Miles and Huberman (1998) proposed several techniques key to establishing confidence in naturalistic research. These included integrity of observations, peer debriefing, and negative case analysis. To ensure the communicability of results, a discussion of specific techniques employed in this study is provided to aid the reader in determining the credibility and dependability of the steps taken in making interpretations.

Establishment of Credibility

Steps taken to establish the credibility of a naturalistic study aim to solidify the degree to which the findings are found to be believable and convincing (Isaac & Michael, 1997). The credibility and trustworthiness of this study were enhanced by the use of the following techniques: triangulation of data; peer debriefing; and member checks.

Throughout the study triangulation was used to corroborate findings through analysis of differing data sources. These data sources included objective observations and interviews to capture each participant's personal perspective and permanent products. The critical examination of the different data sources allowed for a sorting and

identification of salient characteristics of the specific phenomenon (Isaac & Michael, 1997). For example, in cross analysis of the observation notes, the verbal data, and the goal and objectives developed by the participants, I was able to see that what a teacher may have identified as a strategy for development verbally was not always demonstrated in the final product. This type of reflective synthesis resulted in credible interpretations supported by all data sources. Additionally, in chapter four thick descriptions and direct quotes are included to support the interpretations drawn across the data.

The technique of peer debriefing is described by Miles and Huberman (1997) as an engagement of an outside party to aid in the exploration of one's research approaches, the strengths and weakness of the approaches, as well as the implications of choices made. Throughout the duration of the study, I established constant dialogue with professional colleagues who were directly involved with IEP development, including special education department chairs, special education compliance facilitators, and special education mentoring teachers. These conversations were beneficial, as I gained insight into how new special education teachers learn to develop IEP goals and objectives, as well as the problematic areas of IEP development for more experience teachers.

Similarly, I also maintained constant communication with experts in the field of special education, qualitative analysis, and expertise development. Through the course of the study, this tribunal of professionals was instrumental in guiding me through mapping the sequence of the study, organization of the data, and determining the relevance of themes as they emerged. From this reflective dialogue, I received instrumental feedback and direction on descriptions, analysis, and interpretations.

The technique of member checks was also an integral component in establishing the credibility of the study. Member checks require the sharing of data interpretations. For the purposes of this study, member checks were informally done immediately after each follow up interview. If I had clarifying questions or needed to validate what I thought the participant meant by a statement, we would correspond via telephone and email. Member checks helped me ensure that I accurately captured participants' perspectives on IEP development, as well as clarified strategies used during the think aloud protocol.

Establishment of Dependability

The criterion of dependability determines, within reason, the degree to which the findings of one study are consistent with similar studies (Isaac & Michael, 1997). The theoretical framework for the study was based upon the Model of Domain Learning (Alexander, 1997). Findings from previous research on the MDL provided empirical support for using the profiles of development and predicted relations to categorize learner behaviors within a particular domain (Alexander, 2003b). Thus, as themes emerged, I used the model predictions as a guiding principle. For instance, when the examination of the data uncovered parallel performances between the two more experienced and one less experienced participant in the writing of IEP goals and objectives, I critically reexamined data to further clarify. However, further inquiry revealed that it was not that the more experienced participants demonstrated the same working knowledge and skills of a less experienced, but rather, both of the more experienced participants had similar training experiences on specific techniques they used to write goals and objectives.

To strengthen the dependability of the study, I employed an abbreviated form of an audit. Consistent with methods of verbal protocol analyses, 30% of all transcribed data from the verbal protocol activity was independently recoded in order to establish interrater reliability. Interratter reliability was also determined for the scoring of the permanent products.

The results of this study emerged from the reflective dialogue of the participants. Their perceptions, views, and beliefs pertaining to instructional planning were critically examined in determining how individual education plans for students with disabilities are developed. The purpose of this study was to describe how special educators execute the task of IEP development and highlight any differences in that execution across years of teaching experience. The overall trustworthiness of this study was captured by the presentation of a clear and meaningful link between the research questions, raw data, and the conclusionary interpretations (Bratlinger et al., 2005).

Researcher Reflexivity

Opinions relating to objectivity and subjectivity in qualitative inquiry vary greatly (Bratlinger et al., 2005). More traditional qualitative researchers would argue that subjectivity cannot be completely controlled, and embrace positional lenses by which they study a particular phenomenon. In contrast, I lean more toward the positivist end of the qualitative to quantitative continuum. While I value the multiple realities that arise from natural differences in the development of human perception, I recognize the potential problems subjectivity may create in the validity of a study. Therefore, in an attempt to establish the limits my subjectivity, I offer a discussion of my potential biases as a qualitative researcher.

Qualitative researchers are often the instrument of data collection, content analysis, and translation. Acknowledging and understanding the potential influence a researcher has on a study is essential to the believability of a "final story."

My first concern was that I am a special education teacher at an elementary school. During the time of data collection, I was employed part time as a resource teacher by the same local education agency as the participants of the study. Two of the participants worked at the same school that I was assigned to. Being known by the staff presented both potential limitations as well as benefits.

The greatest possible limitation was the degree to which the participants' performance during the verbal protocol was influenced because of our familiarity with one another. I attempted to explore potential participants' feelings concerning our collegial relationships, locations for implementing the study, and other staff perceptions of their participation. During initial conversations, I specifically asked if there were any reservations. Each prospective participant acknowledged the same type of reservation, which is illustrated in a sample dialogue with one of the more experienced teachers.

> Researcher: Okay, so if you had any reservations about participating in a study that looks at how IEP's are developed what would they be?
>
> Marci: Well, personally, I've ah got some strong feelings about the way we do our somewhere…less distractions you know what I mean.

Although the less experienced teachers had the same reservations, they generally were more worried about how their participation may look to other colleagues versus wanting to share strong opinions. A less experienced teacher reflected this in the following response.

Lucy: It's so crazy around here for me, I just might be able to give you a clearer picture of how I work on IEP's if I'm not here. I wouldn't want anyone around here to question what I was doing. I would be a little nervous if someone asked me or something.

Each participant received a letter of introduction and an informed consent, which explained in detail any potential risks and benefits of the study. All participants were assured that their consent was voluntary and could be terminated at any time.

In retrospect, the existing familiarity placed participants at ease during the implementation of the study. They were frank and forthcoming in expressing their perceptions, beliefs, and critiques of the IEP development process. The participants who worked with me at my school affectionately deemed me the "IEP police." This seemed to reflect a respect for my genuine interest in understanding the development process as an initial step toward the betterment of IEP's for students with disabilities.

As a special educator, and the parent of two children with disabilities, I did not journey to this study without philosophical beliefs and concerns about the IEP process. I have had sixteen years of direct experience with the process across four states and five different school districts. While the faces of the process have been distinctly different, the areas of concern were always consistent for me. This study has yielded a degree of insight into the intricate components involved in the IEP decision-making process and the particular characteristics of the individuals that design instruction for students with disabilities. It is within this context that I acknowledge my preconceived notions and incorporated previously mentioned strategies to reduce the influence of my bias on the final interpretations garnered from this study.

In conclusion, this chapter described the qualitative research design used in the study and the guiding research questions. A task analysis was presented that outlined the components involved in the decision making process for developing IEP goals and objectives. The data collection sessions, including the think aloud protocol and follow-up interview procedure, were described. A discussion of the data analysis delineated the cyclical process of coding the verbal protocol data, the scoring of permanent products, and the alignment of observed participant performance with the developmental profiles described in the Model of Domain Learning (Alexander, 1998). Lastly, strategies incorporated in the design to ascertain the credibility and dependability of the study are described.

Chapter Four will begin with the personal context of each teacher. The findings related to each of the proposed guiding research questions are presented. From a synthesis of those findings, emerging themes are discussed within the context of the theoretical framework that informed the study and the review of literature that was presented in chapter two.

CHAPTER IV

RESULTS, CONCLUSIONS, AND IMPLICATIONS

Current legislation governing the education of students with disabilities clearly conveys the expectation that special education instruction should be anchored in the general education curriculum, to the maximum extent possible. In practice, many special educators have to move beyond developing just procedurally correct instructional education plans to ensure standards based accountability (Nolet & McLaughlin, 2005). In the course of exploring the decision-making process used to develop IEP goals and objectives, experience may factor into how this process is carried out. This study set out to explore both the nature of IEP development and the relative differences among teachers who vary in their teaching experience.

In an attempt to understand the process by which the teachers developed an IEP, it is vital to understand the participants themselves. This chapter begins with the personal context of each special education teacher so that readers can gain insight into each individual's personal stage of learning. This personal context provides a rich description of participants and frames the personalities and influences that are interwoven into the decision making process they utilized during the development of IEP goals and objectives.

The second section of this chapter addresses the following research questions:

1) In what ways will less experienced and more experienced special education teachers differ in the forms of knowledge that they demonstrate, and the types of strategic processing used, during the task of developing IEP goals and objectives?

2) In what ways will the written IEP goals and objectives developed by less experienced and more experienced special education teachers differ in the degree of:
    a. Technical adequacy (antecedent, behavior, and criteria)?
    b. Congruency (connectedness between the present level of student performance PLOP, goals, and objectives)?
    c. Instructional relevance (scope is appropriate, objectives are written in hierarchical and sequential order)?
    d. Curriculum alignment (accesses general education curriculum outcomes)?
3) In what ways will less experienced and more experienced special educators differ in their levels of interest and professional involvement in the field of special education?
4) In what ways will the demonstrated knowledge states and strategic processes of more experienced and less experienced special education teachers engaging in the domain specific problem-solving task of IEP development align with the stages of expertise development predicted by the Model of Domain Learning?

The most salient information that directly corresponded to the specific research questions is presented. Specifically, discussion of emerging themes is presented related to: a) knowledge and strategic processing of participants, b) how participants differed across aspects of the IEP, c) how participants rate their level of interest, and d) performance alignment with the Model of Domain Learning. The final section of this chapter outlines the limitations of the study and addresses possible implications for practice and further research on IEP development.

Personal Context of Participants

Data from the pre-task questionnaire in conjunction with the follow up interview provided pertinent information about each participant. This information provided a better perspective of participants' backgrounds and attitudes regarding instructional planning and goal development for students with disabilities. It became apparent that, although coming from varying backgrounds, they embraced similar educational philosophies about educating students with disabilities. For confidentiality purposes, a pseudonym is used for each participant.

More Experienced Special Education Teachers

The more experienced special education teachers in the study met the criteria of having 10 years or more of teaching experience with elementary level special education students identified as learning disabled in a resource room setting, and held a professional state certification in special education.

Maria. At the age of thirty-eight, Maria was a soft spoken woman. During our initial conversation concerning her participation in the study she explained that she was special education "home grown," meaning that special education was a career choice made early during her undergraduate studies. Graduating with a degree in special education, she immediately pursued a master's degree where her focus was curriculum and instruction for students with disabilities. When asked why "special education" as a field, her response was that she grew up with a sibling who had special needs.

> Although I always felt like I grew up in her shadow…she always needed a lot you know, I secretly wanted to make things better for her at school and soon. Special education then is not our special education now.

Maria started her teaching career in a self-contained class for students with behavior disorders. She summarized that experience as "suicide" for a brand new teacher. The following year she transferred to her current school, where she has been the resource teacher for the past eleven years. As the resource teacher, she pulls out several groups a day from various general education classrooms and provides small group instruction. She services a total of 23 students identified as having either a developmental delay or a learning disability. When I inquired about her future career goals she stated she was "just fine" being in the classroom with "my babies."

Maria is well respected at her school and in addition to her special education caseload; she is the case manager for all general education students in grades kindergarten through third grade who are identified as at risk for academic failure. As case manager, she is responsible for managing all aspects of interventions used with this population of students. The duality of her roles presents high paperwork demands.

> On top of all the IEP stuff, I send invites, follow up letters, help teachers implement strategies, document when they don't work…. It's like special education paperwork before the kids are even identified…not fair, but I just follow protocol.

Maria felt like the majority of her efforts go into the instructional planning for her students either during IEP development or in preparing weekly lesson plans. She made mention of how different writing IEP's is now compared to when she first started teaching.

> You used to be able to write goals for the kids regardless of what they were doing in the regular class but now they want you to "backmap" to curriculum standards.

> If I had a dime for every time they change the way we should write goals, I would be rich and could retire.

She further shared that often she can get an IEP for a student from a neighboring school in the same district and the goals would be developed in a different way.

Marci. Marci was very charismatic and well spoken, thirty-five-year old. As a former event coordinator for a non-profit charity benefiting individuals with disabilities, Marci came into special education 15 years ago through an alternative certification program and recently earned a master's degree in Special Education. Marci is a compliance facilitator at her school. She explained that the position carried "a fancy name, little power, and a lot of work." As compliance facilitator, she is responsible for reviewing all special education paperwork completed by the various special education teachers in her school. The position affords her the opportunity to help teachers write instructional objectives according to the guidelines of the school district. Despite the excessive demands of the position, Marci continues to provide instruction four days a week to 10 students identified as having learning disabilities. Here students are grouped according to their instructional needs and are taken to her classroom to receive services. She speaks of the importance of getting "IEP's right."

> Although the way we write IEP's keeps changing, the purpose has always been the same…to make sure these kids get what they need…accountability. Every special education teacher can tell horror stories about how general ed teachers don't accommodate, sit them in corners with coloring books or whatever, but on the other hand I've seen some really awful special education teachers and to me

> that's the real reason for IEP's. It makes us accountable for what and how we teach these kids. No more worksheets all day.

Marci believed the biggest obstacle in writing IEP goals at her school is linkage to the general education curriculum when there is a two-to-three year gap between a student's instructional level and current grade placement.

Mona. At the age of 41, Mona is a seasoned special educator and has been at her current school for twelve years. Her background included six years of teaching as a self-contained special education teacher. She moved to her current school as a resource teacher when the self-contained class was dispersed back to home schools. As the resource teacher Mona provides daily small group instruction to 32 students identified as learning disabled or other health impairment. Three of the students on Mona's caseload receive direct instruction in their general education classrooms. The other 29 students are pulled out of the general education setting and receive instruction in Mona's classroom. Mona explained that she strongly believed that, while the IEP as a whole may provide valuable information concerning a student, the instructional objectives are often developed on information that captures only a glimpse of a student's ability.

> There are some times I get an IEP and I won't even read it because I don't want to have these preconceived notions or low expectations of what a student can or cannot do. Once I feel I have a clear picture of what they need in the classroom, I read the goals and make changes as I see fit so that I'm teaching and pushing achievement and not just remediation. I believe a big part of the problem with our students is low teacher expectation.

Mona described her approach to instructional planning as "collaborative." She attends a mandatory grade level team meeting twice a month. At those meetings she helps general education teachers incorporate necessary modifications into their planning. She described the meetings as "useful" in allowing her to stay connected to the general education curricula and very aware of the student expectations in general education settings.

Less Experienced Special Education Teachers

The less experienced special education teachers who participated in this study had one or two years of teaching experience with elementary level special education students identified as learning disabled in a resource room setting, and held a state provisional or professional certification in special education.

Lisa. Appearing much younger than twenty-three years old, Lisa described her current school year as "chaotic." During our conversations she expressed her gratitude for the preparation she received while in her undergraduate program. Even with extensive student teaching experience in a resource class, she said "it doesn't really prepare you for the reality of special education." The professional development coordinator on the campus is the mentor for Lisa and all other new teachers in the school. Lisa explained that her situation is difficult because she is the only special education teacher in her building.

IEP development presents the biggest obstacles for Lisa. Only having participated in four IEP meetings this school year, Lisa says it's difficult to practice writing goals and objectives.

> So far I've only had to do annual reviews, so I look at what the goals were for the previous year and use the guides to see what should come next for the student. I

> haven't had to do a student from scratch…you know an initial meeting. A resource teacher from another school will come and help me with my first one. I suppose it's one of those things the more you do the better you get. I try to use what I learned in school, but it's never a perfect fit.

Lisa serves 22 students identified as having either a developmental disability or a learning disability. She provides small group instruction in the general education classes to her kindergarten students and implements the rest of her daily schedule in her classroom. Lesson planning is a little easier for Lisa. She indicated that she felt far more prepared for writing lesson plans than IEPs. Submitting weekly lesson plans has provided her with a lot of practice and valuable feedback from the vice principal, who is the designated administrator for special education. Lisa admits that the same level of practice and feedback on IEP development would be beneficial to her. At the time of this study, Lisa had not yet attended the district's IEP development training, which is held annually each December.

Lori. Lori was a second-year teacher. Currently she is twenty-seven years old. She came into the field of special education as a lateral entry. Lateral entry is defined by the local education agency as an individual who has a bachelor's degree in a related field and is placed in a teaching position for which they do not hold a certification. Lori graduated last May with a bachelor's in psychology. She explained that she had not completed any education or special education coursework during her undergraduate studies. Last year when Lori accepted the position, her only experience with special needs children was volunteering one year at the local Special Olympics competitions. As a resource teacher, Lisa provides specialized instruction to 24 students identified as having a learning

disability. The students are grouped according to their content needs and receive instruction in her classroom.

Looking back, she recalls feeling very overwhelmed by the demands of the teaching in special education. Now as she starts her second year, she calls herself a survivor.

> There were three major things for me last year…I stayed sick from all the germs, I cried all the time and I felt guilty every time I stood in front of my students. I couldn't believe how much you needed to know to teach these kids…at least to teach them the right way. It didn't get better for me until I started taking classes in the spring. I also got assigned a special education mentor in early January. She was a big help and got me pretty much on my own with the IEP meetings by the end of last school year.

Even with the special education coursework and well on her way to earning a doctorate next year, Lori notes IEP development is still tricky and does not fit a standard rule. She feels that making appropriate connections to the general education curriculum is still a problem area for her. But, "survival" in conjunction with coursework and a mentor makes her very optimistic about the future in special education.

Lucy. Lucy is a feisty twenty-two year old and a first-year lateral entry special education teacher. Similar to Lori's first year experiences, Lucy describes her first two months as her "worse nightmare." Rather than bewildered and confused, Lucy is angry and frustrated.

> I try to stay positive, but some days I can't believe they hired me. Here lately I feel like just a warm body. Every time I think I know what I'm doing someone

> comes to observe and they say, "nope it's not right." I'm determined to make it through the year, but I don't know if anyone will be able to call me a second year teacher.

Lucy graduated last May with a bachelor's degree in psychology and a minor in Spanish. She has not had any education coursework or classes in the area of special education. Her mother, who is a general education high school teacher, encouraged her to apply for the position. She remembers her mother telling her it would be a crash course in "growing up." Lucy was not sure about her future career goals but was definite about them not including teaching.

Lucy is a resource teacher at the same school as Marci. She is responsible for providing instruction to 17 students identified as having learning disabilities. Although it took her some time to get her classroom up and running, Lucy delivers instruction in her classroom daily. Lucy has had the support of an assigned mentor, an experienced resource teacher who functions as a compliance facilitator, and weekly visits from a special education coordinator from the central office. Marci described Lucy as having the potential to be a strong teacher, but lacking motivation and follow through. She further commented:

> The situation with Lucy is a perfect example of the numbers game. If we don't have at least a lateral entry in a vacancy position…we don't get the funding. It's unfortunate, and resource is probably harder as a lateral entry than say a self-contained class because of the caseload, scheduling, and all our other duties. Our school is on a growth plan so we are supported by a team to increase special education population scores. She has received a lot more support than even most

lateral entry teachers get. There's no urgency to move beyond the basics…I think on her part. Disbelief in your students and a lack of initiative are pretty much the kiss of death in special education.

During initial conversations about Lucy's participation, she explained that she had sat in on a lot of IEP meetings, but she really didn't understand the "nuts and bolts." Her expectation was that someone was going to sit down and teach her how to prepare for and conduct IEP meetings, develop lesson plans, and teach the curriculum all before she would start seeing students. However, the reality for Lucy, as with many beginning special education teachers starting classes without the level of training needed, is that development of instruction has presented numerous obstacles. Lucy felt that her participation in this study would reveal the "absurdity of placing inexperienced people in charge of the instruction of the neediest kids in a school." In the follow up interview, Lucy shared with me that she recently had been put on a corrective action plan for lesson plan development.

Discussion in this section offered insight into the personal context of participants. Although each participant came to her present understandings of IEP development by a different path, she represents individual reality within the context of a special education classroom.

Results

The findings of this study emerged from a synthesis of data connected directly to the research questions. The first research question guided an examination into how less experienced and more experienced special education teachers would differ in the forms of knowledge that they demonstrated, and the types of strategic processing used, during the

task of developing IEP goals and objectives. Data were collected from verbal protocols and permanent products to gain insight into what level of knowledge these special education teachers demonstrated and what types of strategies they used to develop IEP goals and objectives. Explication of this question revealed evidence of the following themes: a) foundational knowledge, b) knowledge cohesion, and c) strategic processing across analysis of data.

Knowledge Representation

There are many intricate steps involved in the development of IEP goals and objectives. The initial step involves the consideration of multiple data sources gathered to describe differing aspects of a student's learning profile. The simulated student confidential file provided for each participant during the verbal protocol task was constructed to be representative of authentic student data used in actual IEP development. Often student data are snapshots that reflect student performance across given periods of time. Information presented in the assessment reports, educational history, and parental reports may or may not include all details needed in order to form a judgment concerning the student's instructional needs. The segmental nature of this type of student data required participants to demonstrate their ability to synthesize all the given information, thereby highlighting their differing levels of knowledge.

Knowledge representation encompassed three distinctive components: foundational knowledge, knowledge cohesion, and strategic processing. Strategic processing did not emerge as an isolated theme of knowledge representation, but rather appeared to work collectively within each participant's knowledge base. For the purpose of the study, strategic processing was defined operationally as any verbalization reflective

of processes used to make sense of the provided information. As such, the discussion of strategic processing is integrated within the components of foundational knowledge and knowledge cohesion.

Foundational Knowledge

Foundational knowledge was a clear and repetitive theme identified as a factor in the overall effectiveness of the developed IEP goal and objectives. It was defined operationally in this study as any basic knowledge pertaining to the domain of special education. There were marked differences and commonalities across participants that clustered around experience level.

Less experienced special education teachers. The less experienced participants were categorized by one to two years of teaching experience on an elementary level in a resource room setting. Even within such a small range of experience, Lisa, Lori, and Lucy were very different in their foundational knowledge. While each of them approached the verbal protocol task in the same manner of restating given directions, there were glaring differences in their demonstrated ability to decipher information from the various forms of data presented.

Lisa, began the task by saying "I am suppose to review everything and write a goal that is adequate and relevant." She then proceeded to read verbatim each report that was provided in a sequential manner from right to left. It was not until she completely finished the lengthy review that she began to try and determine the information needed in order to draft a goal and objectives. This interpretation was supported by the following comments:

> Now, I need to go back and…let's see...I need to first write down his areas of need. I'm not really familiar with the psych or the other, what's that, a speech report. But I can find what I need here. Okay, I'm looking at the educational report. Okay I'm looking for the deficit areas. The report says…okay here it is his lowest score on the test was in academic fluency and broad reading. I'm not real sure what academic fluency is, but it said in the intro he had a lot of difficulty with decoding and comprehension. Okay I need a functional grade level…here it is, first grade eighth month. So I'll start with decoding and comprehension at the first grade level in the curriculum guides.

From this comment, it is evident that, while Lisa was not knowledgeable enough to interpret information from all the assessment reports, she understood the rudimentary purpose of the educational report, and that somehow those deficit areas should be linked to the general education curriculum. Lisa used strategies like restatement of task and verbatim reading to self-monitor her understanding of the data sources. When reading about concepts that she didn't quite understand, she skipped them and immediately sought more familiar information. The majority of the strategies employed by Lisa are commonly used to facilitate initial comprehension of domain specific text (Alexander, 2004).

When asked how the verbal protocol task differed from how she actually developed IEP goals and objectives, she replied:

> I usually don't get all those reports. Maybe once, no twice so far I had a new student transfer in from out of town where it was like that. But I just look for what I know about. It's like a formula…find deficit areas…you know the lowest scores,

then straight to the curriculum guides to see what they should be learning, find their functioning grade level and use those standard objectives to write the goals. The only other difference is that, if I'm really not sure which goals and objectives to pick, I will look at another student's folder from last year who was working on the same grade level, just to get an idea of how to word them.

Much like Lisa, Lori began the task with a verbatim review of each assessment provided for her. However, during her review, Lori would take notes regarding information she thought would be important to remember from each report. After completing her lengthy reading she commented:

> Okay, let me go back. Now let me review from the educational. I know Johnny is low in reading decoding and comprehension, and he can't stay on task. Okay, I have my areas of need. I'll address the reading in the goal and objectives and I would address the off-task behavior in the accommodations if I were doing that part…from the speech I know he has no speech needs and from the psych report I know the full scale score, that's all I need… it says he has an average IQ. Now here's what is hard for me. The educational gives a grade equivalent of first grade, but when I've written goals to match grade equivalents before the goals don't really match what the student can actually do…it's always too low. I have a hard time translating this stuff into a functional grade level. I'm gonna take a guess and go with second grade in the curriculum guides.

Lori was able to demonstrate a fundamental understanding of each report she reviewed. Her ability to extract pertinent student characteristics, and target impacted areas, exemplified an early conception of special education components and how they

collectively work to support a student with disabilities. In addition to verbatim reading, we see Lori added the strategies of note-taking and usage of prior knowledge to her repertoire, signifying growth in her foundational knowledge. As a second year teacher, Lori's knowledge base had evolved beyond the isolated chunks of information that Lisa used in developing her goal and objective. Nevertheless, Lori's manner of identifying information was still very rote, suggesting a lack of integration across the diverse elements and relations presented in the assessment data.

In responding to how the verbal protocol task differed from the way she actually develops goals and objectives, Lori remarked:

> That's it…that is exactly how I develop my IEP's now. I guess the question for me should be how different is it from last year! I didn't understand all the jargon people would throw around…you know simple stuff like goals and objectives. Because I had no experience or schooling I had no inkling of what it meant. So when it was time to write a goal for a kid like the one in the task, I would have been stomped because I didn't understand what "decoding" meant. I was holding on by a string. It wasn't until I started taking my coursework that any of this made some sense. Even now I think I understand the basics you know…what to look for in the reports, but the translation is still hard for me. The curriculum guide is almost like a double edge sword…sometimes I'm on target when I use it and sometimes I'm not. I mean even when I give the Woodcock myself and I have to interpret what the scores mean…it doesn't quite make any sense without an example. I am still very dependent on examples. I know there shouldn't be a 1, 2, 3 steps to writing goals but it takes time to learn to filter all that info.

Determined to expose the absurdity of hiring an inexperienced college graduate, the third participant, Lucy, initiated the task by stating "You're really gonna see the truth now!" Lucy began the task in the same manner as the other less experienced participants, namely by reading word for word all five of the documents provided. Lucy was the only participant to ask for the directions again. She was directed to read the written form of the verbal directions that were given before the start of the task. Throughout the task Lucy appeared to be more focused on what she didn't understand than what she did understand. The frequent use of phrases like "I don't understand this…No one has explained this to me before…. and This is a joke" were indicative of Lucy feeling overwhelmed by the task itself. After allowing Lucy to point out what she did not know, she was redirected to think aloud while she completed the task of developing a reading goal and objectives for the given student profile. She attempted to comply by commenting:

> Reading is the area, so I go to the curriculum guide and look at reading….I know that much. I need a grade level though…I don't know where that is. I'm looking at this student vignette… It says he is in the third grade. Okay, the third grade reading is broken down into so many things, I have a hard time even reading this thing right…Let me see, 1.3.1 concepts about print…it says mastery is expected for all those so I guess he doesn't need a goal for that. Next is 1.3.2 alphabetic principle…It's the same, mastery expected. Moving right along 1.3.4 is cueing systems…I really don't know what that is but it's got a lot of mastery expected, so I will give him 1.3.4.3a for an objective. 1.3.5 is comprehension with no mastery expected, so I will give him 1.3.5.1 and 1.3.5.2. 1.3.6 is evaluating informational text…I don't guess he would need this until he learns to read, and the same thing

for the independent reading. So let's see, I've got one two three… three objectives for him. That's about what most of the examples have that I've seen.

Lucy made little or no connection between identified areas of weakness and the general education curriculum. Aside from verbatim reading and restating directions, Lucy depended solely on her interpretation of what the end product should be as a strategy for developing an IEP. Essentially, Lucy went through every state standard for the content area of reading at the appropriate grade level and lifted the first objective without subsequent evidence of the student needing that objective. When she saw the phrase "mastery expected at previous grade level," she made no attempt to trace that objective back to its original grade level standard in an effort to find an appropriate objective.

With further inquiry into how the verbal protocol task differed from everyday IEP development, she responded:

> I always start with the finished product. You know what everyone keeps telling me an IEP is supposed to look like. I look at the goals from the previous year…that's really the only difference. I don't claim to understand the how of writing IEPs, but they knew that when they hired me. So the best I can do is try to mimic and hope I learn it along the way. I do know that it all comes from the general education curriculum guides. My mentor told me it's my bible, so I take all my goals from it. I figure as long as they are tied to the general ed curriculum I am safe or it will at least get me through this year.

Lucy's performance on the verbal protocol task was greatly impacted by a lack of understanding the basic premise of instructional planning, minimal strategic processing, and very limited foundational knowledge about special education. She was not able to

demonstrate that she understood the information in the assessments or even the simplicity of connecting what the student does not know to what the student should be learning. While Lucy was able to point out many things she does not comprehend, it is clear that she feels her mediocre performance is the fault of the system that allows someone like herself to be responsible for the education of the most neediest students in the school. Regardless of where the blame falls, it is important to understand that Lucy's reality is not an isolated case. This dynamism is reflective of the interplay and even tension of the situation and context in which Lucy's domain learning is occurring. However, the student is at risk of not receiving appropriate instruction (Billingsley, 2004; Brownell, Sindelar, Bishop, Langley & Seo, 2002; Brownell, Ross, Colon, & McCallum, 2003)

The degree of foundational knowledge varied greatly across the less experienced participants. Their performances represented a continuum of learning. Lucy, having no previous special education experience or training, exhibited minimal indications of understanding the basic tenets of special education practices. Lisa, a graduate of a special education program of study, understood the premise of instructional planning but was inept in her ability to consider the linkages between the multiple data sources and curricula to identify the level and type of supports needed. In contrast to Lucy and Lisa, Lori demonstrated comprehension of tasks related to extraction of relevant student information from multiple data sources. However, she displayed difficulty with knowledge of the interrelations between the components of the general education curricula, which limited her ability to clearly define an appropriate starting point within the content area standards. The strategic processes used by the less experienced participants reflected of basic cognitive processes including rereading, note taking, and

defining unknown vocabulary. In effect, the demonstrated strategic processes only aided the participants in understanding the information as opposed to making connections across the information.

Knowledge Cohesion

Literature supports the contention that experience level increases are linked to concomitant increases in both the depth and breadth of domain specific knowledge (Alexander, 2003b). In gaining insight into how the more experienced participants represented their domain specific knowledge, the focus turned to whether or not their foundational knowledge was cohesive and principled in structure. This theme of knowledge cohesion was defined operationally in this study as knowledge representing the interplay between topic and domain knowledge, integrated linkages of concepts, and an increasing familiarity with problems typifying the domain of special education. The theme of knowledge cohesion is also earmarked by an effective repertoire of the surface-level and deep processing strategies that will be discussed throughout this section.

More experienced special education teachers. All three of the more experienced participants demonstrated a sufficient base of subject matter knowledge, denoting an understanding of the structure and lexicon of special education. The degree to which the participants differed in the cohesiveness of their knowledge was evident in their application of strategic processes to interpret results, construe meaning, and build linkages across multiple data sources.

Throughout the verbal protocol task, Mona was able to extract information she thought was pertinent to the final development of an instructional goal. Her familiarity

with the multiple data sources was apparent from her summary after reviewing all the assessments.

> Okay, I've got a third grade student who has struggled consistently with decoding and comprehension since kindergarten. His educational was done because of concerns with auditory and visual memory retrieval, but he had standard scores in the average range; he was low average in decoding, writing, and comprehension. That's typical for a learning disability in reading. His referral for speech was due to concerns with following verbal directions, word retrieval, listening comp…I'm seeing a pattern here. He was solidly average across expressive and receptive language scores. But just as a side bar, you will typically see grammar difficulties when there are dual languages spoken at home. We've got a kid with some scatter here. He looks between average and superior on paper in terms of IQ, but I'm sure there is difficulty with the everyday practical application of skills. Another major concern for Johnny is also his attention span. He is at risk for attention and learning problems, which is probably a big factor in his inability to comprehend grade level text. Johnny's present level of performance is characteristic of a learning disabled student with a double whammy…the dual languages and attention. I've got enough info here to justify a starting point in the curriculum and determine how his disability is impacting his learning of 3rd grade standards.

Clearly, Mona is able to synthesize the multiple data sources. The student characteristics that she focused on were very different from the isolated pieces of information used by the less experienced participants to guide their instructional planning. She honed in on family history and repetitive patterns across the student's

educational history. Her thorough consideration of the data sources was the cornerstone of her instructional planning and set the stage for goal development based on a more complete snapshot of student performance. By comparison, there was also a transformation in the type of strategic processes used by Mona. She relied on strategies including pattern identification, accessing prior knowledge, and forming a mental representation of the student. The combination of strategies and a well integrated body of domain specific knowledge characterized the level of knowledge cohesion demonstrated by Mona.

Similar to Mona, Maria displayed a strong ability to maneuver through the components of each assessment. However, Maria's conclusionary comments were not reflective of knowledge cohesion to the same degree that Mona was able to demonstrate.

> Based on all this information I have reviewed, it appears that it may be more than just a learning disability impacting Johnny's academics. I know he is below grade level across the board academically in the 3rd grade. He's got problems with decoding, sight vocabulary, and written expression. He had indexes from 94 to 123 that would be considered in the normal range. He's got average range of IQ on any tasks requiring verbal knowledge and superior on non verbal reasoning. Johnny gave no indication of a speech and language deficit. And as a side bar…he has a family history of LD and a second language at home. I know the areas of weakness but I think there is some X factor per se. All this appears to suggest possible attention deficit. Really, to be honest, if this kid is not treated for the attention it doesn't really matter what type of goals I develop. So I guess he'll get

my "back map special." But I want it noted that he should also have a goal and objective for attention developed in addition to a reading goal.

During the follow up interview Maria was asked to explain her "backmap special." She explained that she uses this term to describe what she thinks is a "one size fits all approach" to developing IEP's. She explained further:

> I've gotta a lot of problems with the "backmap special"…first of all it's not district wide. I get plenty of folders from different schools within my very own district that are developed in other ways…some of those goals are sometimes more appropriate to me than when you backmap, which brings me to my next problem. I know No Child Left Behind says they've got to get them up to grade level, but I also know when my goals are backmapped to general education curriculum, students are still so far from the mark. When we used to write goals based on the specific skills kids needed, they made more observable progress than starting at say 3rd grade for the kid in the task and working down to 2nd grade for him. Even some of the 1st and 2nd grade standards have ridiculously high student expectations for kids with learning disabilities. Eventually, just like with everything else in special education…this way of writing IEPs will be deemed inappropriate and another latest and greatest will take its place.

Maria exemplifies a seasoned special educator who encompasses a well developed foundational knowledge and is well versed in student data. Her strategic usage suggested a familiarity with problem solving situations that typify the domain of special education such as understanding the characteristics and impact of different types of disabilities. However, Maria lacked the necessary cohesion to form integrated linkages to

the general education curriculum. Although she made mention of the prescribed technique used in her district to ensure linkage to the general education curriculum, it was very apparent that her usage of the strategy is rote. Based on her demonstrated difficulties with curricular knowledge, it is possible she doesn't have a clear understanding of the purpose of the strategy. On the other hand, her comments indicated she may not value linkage to the general education curricula. Her lack of knowledge cohesion, specific to curricula knowledge, resulted in a goal that was transcribed verbatim from the general education curriculum guides with little to no evidence of individualization based on the student's present levels of performance.

While similar in foundational knowledge, Marci demonstrated a far more developed cohesiveness across all facets of her domain specific knowledge base and strategic processing than the other more experienced participants. During the verbal protocol task Marci summarized her consideration of the data sources with the following statement:

> Okay, we've got a lot of student data, which is what I typically see at this stage of IEP development …I'm going to tell you what I'm thinking here. First off, with the educational assessment...it only gave me broad scores, and I personally am not entirely comfortable with just using the broad scores on this because word attack; specifically, is not broken down and that's a big concern for Johnny. I can fill the gaps with the present levels and the teacher reports. But even with whatever goal I write I'm going to want to give Johnny some type of curriculum measure to get a look into separate reading skills. It really isn't enough data, but again overall with a letter word of 86 and a comprehension of 83 that is a 2 standard deviation drop

> off…It's obvious Johnny can't read. Let me check just to see if I could back this up if I had to…yes, he had a full scale of 111 and a reading score of 76, which gives you a 37 point differential…my math is not that good but 30 something, almost the same 2 standard deviations. Okay, the attentional concerns and the language duality are secondary for me here. I mean without going into the which came first the chicken or the egg conversation…the bottom line is there is a problem with the executive function here and I would address supports to help him with the attention in an IEP and with modifications based on further input at the table. That's why we draft and don't make decisions outside the process. Moving on, my next step in the goal development is to do a comparison between what the 3rd grade curriculum says Johnny should be able to do in reading and what his PLOP says he can do to get a starting point for his individualized objectives.

Marci demonstrated a strong command of the interplay between domain and topic knowledge. Unlike the other participants, Marci's strategic processing was more advanced. Her ability to critique multiple data sources provided insight into a higher level of knowledge cohesion than what had been demonstrated by her peers. She appeared to be familiar with some of the more intricate concepts specific to special education such as the discourse concerning the role of executive functioning in students with disabilities. Additionally, Marci approached each stage of instructional planning with fluidity, engaging the problem solving process. She clearly understood how to corroborate findings across the data, validate the present level of performance, and isolate a starting point in the general education curriculum.

Closing Thoughts on Knowledge and Strategic Processing

Against the construct of experience, the knowledge representation of the participants unfolded across a continuum that ranged from minimal foundational knowledge to higher levels of knowledge cohesion. Collectively, the less experienced special education teachers were lacking in their foundational knowledge and their strategic processes were simplistic. Both Lisa and Lori demonstrated instructional planning in its most simplistic form, and they attempted to develop goals with isolated steps. Lisa, being a second-teacher, had more of an established knowledge base, yet she still struggled with the integrated translation of data into curricula needs. Lucy's performance on the verbal protocol task was reflective of not only a lack of foundational knowledge but also the impact of the personal context in which she finds herself at this point in her training as a special educator. Nevertheless, the minimal extraction of pertinent information, the isolated chunks of information they looked for, and the haphazard connection they made to the general education curriculum earmarked the underdevelopment of their foundational knowledge. In essence, they were mimicking steps they thought would result in a good final product.

The more experienced participants showcased well structured knowledge bases specific to the domain of special education. Their reviews of the multiple data sources were routine; however, they varied in their ability to create linkages across broad concepts that would result in an individualized goal and objectives. Mona demonstrated the necessary skills to maneuver through the data and justify a starting point in the general education curriculum based on the student's present levels of academic skills. Maria also demonstrated an ability to decipher the data, but without the linkage to

curricular knowledge, she engaged in a rote practice of IEP development that resulted in a "one size fits all" goal and objective. Similar to Lucy, Maria's performance seemed to be greatly impacted by environmental factors that have shaped her personal context. By comparison, Marci demonstrated a much more intricate cohesion of her knowledge base than the other more experienced participants. Her use of a higher level of strategic processing set her apart and allowed her to effectively translate the multiple data sources into a concise roadmap of where the student is currently functioning in the general education curriculum.

After determining a starting point in the general education curriculum based on the student's present level of performance, the next step in the instructional planning of the participants involved the construction of an annual goal and supporting objectives. A discussion of how each participant addressed quality indicators in their written goal and objectives is next.

IEP Development

The second research question guided the examination into how the less experienced and more experienced special education teachers would differ in their actual construction of an IEP goal and objectives. Specifically, data were collected to determine the overall strength of each participant's goal and objectives in terms of technical adequacy, congruency, instructional relevance, and alignment with the general education curriculum.

As described in Chapter 3, in order for a goal and objectives to be considered technically adequate they should identify the learner, the target behavior, the conditions under which the learner should perform the behavior, and the criteria for acceptable

performance (Alberto & Troutman, 2003; Mager, 1997; Nolet & McLaughlin, 2005). Congruency addresses whether or not the goal and objectives were reflective of a student's needs identified in the present level of performance. The annual goal should have identified a long-term target that was expected from instruction and could be reasonably attained over a span of one instructional year. The objectives should have represented indicators of expected growth broken into segments and been written in hierarchical and sequential order.

Both the scope of the annual goal and the written form of the objectives determined how instructionally relevant the annual goal and objectives were. The last quality indicator, curriculum alignment, addressed the linkage between the general education curriculum outcomes and the actual verbiage used in writing the goal and objectives. It should be reemphasized that technical adequacy and instructional relevance are not mutually exclusive. A procedurally correct goal and objectives would not be technically adequate in the absence of being instructionally relevant. Adherence to all four of these quality indicators renders an IEP goal and objectives reasonably calculated and educationally beneficial to meet the needs of the targeted student.

An IEP rubric (Appendix G) was used to score each participant's developed goal and objectives. The rubric addressed the four quality indicators and numerical scores were assigned to each question. Each participant's IEP goal and objectives were scored by all three judges and assigned a rating classification. The overall score was an average of the three scores. Table 4.1 gives an overview of each participant's overall score and the rating category assigned to her developed goal and objectives.

As with knowledge representation and strategic processing, differences in how the participants constructed an annual goal and objectives also clustered around experience levels.

Less experienced special education teachers. Previously, the less experienced participants' extracted large chunks of information to identify a starting point in the general education curriculum. The following statement was made by Lisa during the actual construction of her annual goal and objectives.

> I've got the first grade curriculum. The annual goal will be Johnny will improve his reading skills. Now I'm looking at the curriculum guide… I'm going to use this one under alphabetic principle. My first objective is: Johnny will associate all consonants, consonant blends, and vowel sounds to appropriate letters and combine these sounds into recognizable words. That is 1.1.3.2. Next objective will be… I'm going to take it from the cueing systems not sure what that means but it's got decoding in it. My second objective is: Johnny will use common word families to decode unfamiliar words. That is 1.1.4.1. The last objective will be: Johnny will read high-frequency words. Now I'm supposed to put a mastery level…mastery level will be at 100% for all of them. The responsible party will be the special education team.

Lisa's rating classification for her annual goal and objectives was "poorly developed." Lisa demonstrated some of the more commonly made mistakes in goal

Table 4.1

Participant Scoring on IEP Rubric

Participants	Judge #1	Judge #2	Judge #3	Average Score	Rating Classification
Lori	11	11	10	10.76	Adequately Developed (11-18)
Lucy	3	3	4	3.33	Poorly Developed (0-10)
Lisa	6	6	6	6.00	Poorly Developed (0-10)
Mona	13	13	12	12.66	Adequately Developed (11-18)
Maria	11	10	11	10.76	Adequately developed (11-18)
Marci	20	20	19	19.66	Gold Standard (19-22)

development. The first problem concerned the annual goal. Although it addressed the content area of reading, it was very vague and did not define an instructional level. Reading is an extremely broad content area; it would have been more instructionally relevant if Lisa indicated what area of reading, such as decoding skills, the student needed to improve in and an appropriate instructional level.

Secondly, Lisa's objectives showed minimal evidence of hierarchical and sequential order. An argument could be made that the last two objectives are somewhat sequential. However, the sequencing of those two objectives appeared to result from a standard sequential order of student expectations within the curriculum guide, rather than a conscious decision on Lisa's part. Another commonly made mistake that Lisa demonstrated concerned the lexicon of an objective. All her objectives omitted an appropriate antecedent or conditions for which the objective would be expected to occur. Because Lisa used the exact wording from the curriculum guide, her objectives contained appropriately stated behaviors, but the criterion of mastery was identical for each objective.

Lucy also received a rating category of "poorly developed" from the judges. Lucy formulated an annual goal and objectives with nominal knowledge. This resulted in an annual goal and objectives lacking in instructional relevance and technical adequacy. Lucy's final goal read:

> Annual goal: Johnny will learn to read on his current grade level.
>
> Objective 1: Johnny will recognize compound words, contractions, and common abbreviations.

Objective 2: Johnny will state a purpose for reading and identify who would use the text and why it would be used.

Objective 3: Johnny will follow more complex written and oral instructions and describe the importance of specific steps in a set of directions.

Lucy made substantial mistakes across all aspects of developing an annual goal and objectives. In terms of her technical adequacy, the scope of the annual goal was too broad and the specific instructional level is in direct conflict with evidence provided regarding the student's present level of performance. Much like Lisa, Lucy did not include a condition under which the objective would be attained or an appropriate criterion for mastery. The goal and objectives were written on a third grade level, thereby nullifying any instructional relevance. While the objectives did reflect the general education curriculum standards, again the mismatch between the chosen standards and the student's identified needs negates the relevance of the linkage.

Lori's annual goal and objectives received a rating classification of "adequately developed." Lori demonstrated an early conception of special education components and how they work together to support the individual needs of the student, as reported earlier, and her annual goal and objectives were better constructed than those of Lisa and Lucy. Starting with the second grade curriculum standards, Lori formulated her goal and objectives with this statement:

My focus is going to be decoding…that came from the PLOP. Okay I'm looking at the second grade curriculum. I'm going to look at phonemic awareness and I think its alphabetic principle. In my curriculum guides I have my goals for decoding and comprehension highlighted different colors so I don't have to guess

at it…My annual will be Johnny will increase his decoding skills to improve his reading. The first goal okay 1.2.2.1-1.2.2.4 and first objective will be given instruction; Johnny will distinguish beginning, middle and ending sounds in words with 85% accuracy 1.2.2.1. Next objective will be given instruction; Johnny will distinguish between long and short vowel sounds with 85% 1.2.2.2. The last objective will be given instruction; Johnny will be able to blend vowel-consonant sounds, consonant blends, and vowel-vowel sounds to make words with 85% accuracy. All three objectives will be as measured by a teacher made test and work samples.

Although Lori took an educated guess to find a suitable starting point in the general education curriculum guide, her annual goal was well defined and clearly addressed the indicated area of need, even in the absence of a specific instructional level. Lori included a condition under which the learning behavior would occur and a criterion for mastery in each of her objectives. However, it should be noted that her antecedent and criterion were the same for each objective, suggesting they were used more as a standard for all the objectives with little connection to the expected student outcome. She copied the exact wording from the curriculum guides for the objectives, which resulted in the measurement of more than one skill at a time. While the annual goal and objectives developed by Lori would not be considered reasonably calculated and educationally beneficial, there is enough evidence to suggest that she at least understands that the components of technical adequacy and instructional relevance should be included in the development phase of goal writing.

By and large, the less experienced special education teachers struggled with writing an annual goal and objectives that would be considered technically adequate and instructionally relevant. Their annual goals were broad in nature and lacked specificity, while the objectives were not inclusive of appropriate antecedents, criterions of mastery, or methods of evaluation. When the objectives did address these components, there was habitual usage and little connection to the expected student outcome. The use of the curriculum guides proved to be what Lori described as "a double edged sword" for the less experienced participants. When the participants copied the student expectations verbatim, they affected curriculum alignment. But without adequately understanding the general education curriculum, it was difficult for them to translate the content standard into an individualized objective that reflected the identified areas of need.

It was not surprising that Lori wrote a better IEP than Lisa and Lucy; after all, she was a second year teacher with more experience in instructional development. Her score of adequately developed, however, calls into question whether the more common mistakes made by less experienced special education teachers will be seen in the goal construction of the more experienced ones.

More experienced special education teachers. Before constructing an annual goal and objectives, all of the more experienced participants engaged in what could be called a refinement of student needs. This entailed going through the curriculum guide at the current instructional level and determining what skills would be impacted by the student's disability. When finding an expected outcome, they would trace that expectation back through lower grade levels to find a match to the identified present level

of academic performance. Once finishing the refinement, each participant started constructing an annual goal and objectives. Mona's annual goal and objectives read:

> *1st Annual goal*: Johnny will improve his use of cueing systems on a second grade level.
>
> *Objective 1*: Johnny will read high frequency words and irregular sight words with ease and automaticity as measured by teacher observation, formal and informal assessment with 80% accuracy (1.2.4.2a).
>
> *2nd Annual goal*: Johnny will improve his phonemic awareness skills on a second grade level.
>
> *Objective 1*: Johnny will distinguish between long and short vowels sounds with 80% accuracy as measured by teacher observations and formal and informal assessments (1.2.2.2).
>
> *Objective 2*: Johnny will blend vowels-consonant sounds, consonant blends and vowel-vowel sounds to make words to syllables as measured by teacher observation, formal and informal assessments with 80% accuracy (1.2.2.4).

Here, Mona decided to write two annual goals to address two different skills. Her annual goals were appropriate in scope and addressed the specific content area of need. However, an argument could be made for combining the two annual goals under basic reading skills; even so, the annual goals were both technically adequate and instructionally relevant. Next, Mona developed one objective for the 1st annual goal and two objectives for the 2nd annual goal. Her objectives specified no condition under which student learning would take place and they were not written in sequential order. Similar to Lori, Mona used the exact wording from the curriculum guides, which did not allow

the objectives to reflect individualization and resulted in more than one skill being measured at a time. Mona's IEP goals and objectives received a rating classification of adequately developed.

Maria also received a rating classification of adequately developed. Her IEP goal and objectives read:

> Annual Goal: Johnny will increase phonemic awareness to increase basic reading skills.
>
> Objective 1: Johnny will distinguish beginning, middle and ending sounds with 70% accuracy (backmap from 1.3.2.1 to 1.2.2.1).
>
> Objective 2: Johnny will distinguish between long and short vowels with 75% accuracy (backmap from 1.3.2.2 to 1.2.2.2).
>
> Objective 3: Johnny will blend cvc words; cv words, and cvc-e words with 75% accuracy (backmap from 1.3.2.3 to 1.2.2.3).
>
> as measured by teacher made tests and work samples.

As previously discussed, Maria's goal and objectives are lacking in the same areas as the other participants who took their objectives verbatim from the curriculum guides. Her annual goal is congruent with identified student needs but does not specify a grade level, rendering it technically inadequate. Her objectives are problematic in that they are not individualized and do not designate a condition in which the student will learn the skills. Maria does display a different perspective on the technique known as backmapping. In the literature, backmapping is one of many strategies a special education program can use to move students with special needs toward grade level standards (Youtsey, 2003). Until now, participants had only indicated a standard number. However,

Maria provides documentation of trellising the standard from current grade level to functional grade level. Overall, Maria's developed IEP is a good example of how a goal and objectives can be instructionally relevant without being technically adequate.

Remembering Marci's demonstration of a well integrated knowledge base and higher level of strategy use, it was not surprising that her annual goal and objectives received a rating classification of "gold standard." Marci's annual goal and objective read:

> Annual goal: Johnny will increase basic reading skills to decode unfamiliar text on a second grade level.
>
> Objective 1: Given verbal direction and curriculum vocabulary, Johnny will correctly identify short vowel sounds with 80% accuracy in every 4 out of 5 trials (backmap from 1.3.2 to 1.2.2.1).
>
> Objective 2: Given verbal direction and curriculum vocabulary, Johnny will correctly identify long vowel sounds with 80% accuracy in every 4 out of 5 trials (backmap from 1.3.2. to 1.2.2.1).
>
> Objectives 3: Given verbal directions and curriculum vocabulary, Johnny will correctly identify common three and four letter blends with 80% accuracy in every 3 out of 4 trials. (backmap from 1.3.2 to 1.2.2.2).
>
> as measured by informal assessments, and student reading charts

Marci's annual goal and objectives reflected all four of the quality standards. Her annual goal was appropriate in language, scope, and specific grade level. The objectives were written with all the necessary components (antecedent, observable behaviors, mastery criterion, and methods of measurement) to be considered technically adequate.

Curriculum alignment appeared to be a strong suit for Marci. Having engaged in the same type of refinement as the other more experienced participants, Marci concluded, as they did, that Johnny's greatest needs were in the area of decoding on a second grade level. Using the same curriculum standards, Marci's transformation of those standards yielded a totally different output from the other participants. Here we see that Marci unpacked each standard in developing her objectives, essentially generating two objectives out of one standard. Additionally, she documented her trellising with two standard identification numbers. The annual goal and objectives developed by Marci were found to be technically sound, instructionally relevant, and educationally beneficial to the specific student.

Collectively, the performances of both the less experienced and more experienced special education teachers created more questions than answers. As seen in Table 4.1, three participants received overall rating classifications of adequately developed IEPs. It begs the question how the performances of more experienced teachers, who demonstrated strong domain specific knowledge bases and strategic processing, were very similar in nature to the performance of a second year teacher. The similarities included a) annual goals too broad in nature and lacked indication of a specific grade level; b) objectives written without an indication of the conditions under which the learning behavior would occur, and were not hierarchically or sequentially ordered; and c) objectives written verbatim from the curriculum guide which did not allow for individualization and result in multiple skills being measured.

To further explore the reasons behind the choices made during the task of IEP development, a follow-up interview was conducted. In addition to learning how the

verbal protocol task differed from their everyday IEP development, I also wanted to tap into participants' perceptions of IEP development, how they used IEP's to plan instruction, and specifically how they learned to write goals using the technique of backmapping to ensure connection to the general education curriculum.

Training and IEP Development

During this line of questioning, the three less experienced participants were asked specifically how they learned to write goals and objectives using the mandated technique used during the verbal protocol task. Though Lori and Lisa had taken coursework on IEP development, both attributed the majority of their learning to using examples and sheer experience in writing goals and objectives. Lisa responded:

> Really the coursework was separate for me because it came before I had a class of my own…it gave me a foundation, but when I'm at school they have their own independent way of writing goals and that's the way I have to learn it. I look at previously written IEP's and I ask a lot of questions. As with anything else the more I do it the better I get.

Lori, felt it was a combination of coursework, district level training, and previously written goals that helped her learn to write goals and objectives. Lucy commented that if she was inadequate in IEP development, then the district inadequately prepared her to do the job because "they knew I didn't know how to do these things when they hired me." When I asked Lucy if she had started her required coursework for certification, her response was that, given the year she was having, it did not make a lot of sense to spend the money. When asked to describe different types of available district IEP trainings, all three mentioned an annual IEP development training that would be held

on a mandatory professional development day. Because the training was scheduled in December, Lucy and Lisa had not attended the training at the time of their follow-up interviews. Lori, who had attended last year's annual training, offered the following description:

> Once a year, usually in December, the special education department has a day of training on the IEP. It's a lot of little trainings throughout the day. You get a folder with handouts on things like if something changed in the law and they had to make changes on the forms, maybe something on changes in using a specific category like developmentally delayed. There is always what they call a basic IEP development class where the focus in on back mapping. They will go over funding issues and timelines…but like I said it's a lot of general things broken up into small 20 minute classes. It's usually informative but it's not like a class where you really feel comfortable to ask the questions you really need to ask like in my certification coursework.

The more experienced participants had a somewhat different perspective regarding district training opportunities provided by their school district and why they wrote goals the way they did during the verbal protocol task. Maria was adamant that the trainings were a waste of valuable time that could be allotted to all the paperwork involved in her day-to-day duties. Mona indicated that she attended the training each year, but felt there was little support with implementing new procedures after the training. Marci provided the following insight:

> The annual training has been pretty standard as far as I can remember attending. It is a collection of all the changes that are coming down the pipe and they give it to

> you all in one day…and yes they expect compliance from that day on with little follow-up afterwards. In terms of training and compliance they give you the information and then you take it back to the school….Now how it gets translated at the school level is how it's done at your particular school. All the schools in the county don't write IEPs the same way…it varies school to school. Really it's up to the principal and whoever they put in charge of special education for that school.

Marci's comments bring up a good point; if the way IEPs are written is not consistent across the school district then how did the participants learn to write goals and objectives in the manner they did so during the task? Initially, Mona and Maria indicated that in addition to coursework, they were sure they were trained by the district to write goals the way that they do. With further probing, Maria shared:

> I really can't remember a specific training where we were taught to backmap. I guess when the new curriculum guides were developed there was just this buzz about how differently the goals would have to be written. In my building we got a sample IEP from somebody at another school and we just figured it out.

Marci shared that it was a combination of things that shaped the way she writes goals and objectives. She explained:

> When I first came into special education it was on the heels of a lot of compliance issues. The district had been audited and there were a lot of law suits that concerned compliance. So the importance of compliance was imbedded in me from the beginning. Of course, we didn't write goals then like we do now. The person who was in charge of making sure the paperwork was correct before

me…had her own way of doing paperwork. Some things I didn't agree with but I did it her way. When she retired and my Principal put me in charge I made sure everything I did…paperwork wise, could be tied into federal regs. I got most of my information about backmapping and tying instruction into the general education curriculum from attending a monthly meeting for coordinators or facilitators, whatever they call us, where there is a little more hands on type of training when there is a major change in paperwork. I mean my coursework has also helped me to write compliant…at least my interpretation of compliant goals and objectives. No one would really know if goals and objectives were being written wrong unless you get a case where an outside person from the central office has to review the folder or the student moves to a different school and the folder has to follow. I've never known…at least at my school we have never participated in any type of internal audit.

Generally, participants attributed their IEP development skills to learning by example. The consensus was that although the school district provides professional development, its general function is to disseminate information on a large scale, offering little support at the school level with implementation.

Perceptions Concerning IEP Development

To gauge participants' perceptions concerning IEP development, they were asked a series of questions with regard to the utility of a student's individualized education plan. Initially, each participant was asked to what degree she thought the IEP goals and objectives were significant in the learning of students with disabilities. All of the participants, except Lucy, felt the IEP was significant for the students because it held the

school accountable for their learning. Lucy, on the other hand, felt the goals and objectives held little significance because the standards were too high for students with disabilities. She explained further:

> I keep a copy of all my students' IEPs in a notebook. When I write my lesson plans to match those goals…most of these kids don't get it. I try and teach the general education curriculum to them and I can go through a whole lesson and never get any indication that they understand what I am teaching. You can really forget it if they have behavior problems; they can't even sit, let alone learn what you are trying to teach.

Understanding the perplexities of Lucy's teaching experiences, one must consider the possibility that the significance of the IEP in the learning of her students is being impacted by Lucy's difficulties with instructional planning as well as her low student expectations.

After addressing the significance of IEP goals and objectives, the participants described how student goals were used in their weekly lesson planning and strategies they incorporated to provide continuity between the two. The less experienced participants spoke of the difficulties experienced in trying to address each student's goals in their lesson planning. As previously discussed, it was during this line of questioning that Lucy shared the fact that she was currently on a growth plan for her lesson planning. She had this to say about her experiences thus far:

> According to the powers that be, my lesson plans are below expectation. I am currently on a corrective action plan for improving my lesson plans. So I really don't know how to answer your question. I thought that I was addressing the

> students' different goals with the lesson plan sheet I was given to use. I teach my reading from the general education intervention guides…when I was observed and they asked to see my IEPs and my lesson plans, they said the lessons were not appropriate to the goals. It's really frustrating…I mean I'm not stupid but I don't get it because no one has sat down with me to show me explicitly how to write lesson plans with all those different objectives. They knew when they hired me I didn't have any experience teaching. So…no I guess I don't know how to use goals and objectives in my lessons and there definitely is no continuity according to my administrators.

Lisa's response typified the long standing resource teacher's struggle with lesson planning, scheduling, and the general education curriculum. She commented:

> I've already been through at least two different lesson plan formats trying to find a way to document every student's goals in my lesson plans. At first I thought it was impossible; my lesson plans were three and four pages long. But just like with everything else, I'm learning how to collapse similar goals together to teach one lesson that goes with their needed skills. So like when I get a new student for reading or something …I know that student is either going to need comprehension or decoding. So I try to put groups together that have similar goals. Sometimes…well most of the time, there is one student who needs math during reading or something like that and that kind of situation is still hard for me. The only strategy I use to provide continuity is writing the general education content standard number that goes with that goal in my lesson plans. Oh well, I don't

know if this is a strategy, but I build my lessons from various materials that will cover the skills identified in the students' IEP.

Lori described a more sophisticated way of using goals to guide her lesson planning. Her school is piloting a computerized lesson planning system, in which she is required to participate. She explained the process:

> With the computerized lesson planning I plan with all the different grade levels that I teach. If I have students with goals written on a 2nd grade level, I use the second grade daily lessons that we planned as a team. The cool part about it is like last year we didn't have this pilot program…I used to have to sit in on team planning and I always felt like I had nothing to offer. Now I give them a lot of accommodations that I use in the resource room and they put them in the plans. The team says it's helpful because it gives them ways to reach struggling learners who are not identified yet. I bring my IEP notebook with me weekly and I talk about the objectives I need to work on, and those skills are incorporated in the lessons. The only difference for me is that I may take longer on a skill, so I'm usually behind the general education scope and sequence. I think the whole way we plan at my school provides continuity not only between the lessons and student objectives but also continuity between the strategies I use in my resource class and what they do in their general education class.

Similar to Lori, Mona also plans her lessons collaboratively with various grade level teams. She reported that the collaboration was beneficial in providing continuity for the students and fostered the generalization of skills across both the general education classroom and resource class settings.

Maria has devised an intricate number system to document student goals that are being addressed and the accommodations that are used during her instruction. "I spend at least two to three hours a week planning for my students," she said. She described all types of materials she pulled from to develop lessons that met the individual needs of her students. Her repertoire of strategies to provide continuity included things like posting daily the corresponding student expectations taken from the general education curriculum guides, having students write exit tickets that described what part of their objective they worked on for that day, and using stickers to chart growth toward their objectives in their student data notebooks.

During my conversation with Marci, she discussed how she has refined her instructional planning over the years. She shared these thoughts:

> The IEP goals and objectives that I write for students are like a road map that is supposed to lead them down a path of remediation…or something like that, but seriously I use goals to guide my instruction. In my plans, I document each goal I am addressing. I also use the objective to make sure I'm not just teaching a lot of isolated skills that the students won't know how to use in the general education classroom. As long as the goal and objectives are linked, then it helps me ensure my lesson plans are linked to what they are actually expected to know. I believe the students should be aware of their goals. We use personalized goals charts in the class to track individual progress. You would think some of the general education expectations would overwhelm the students. But when there is continuity between the goals, my lessons, and the strategies used in the general

education classroom, it provides a true opportunity for them to access the general education curriculum.

Trying to further understand Lucy's perspectives on the significance of goals and her difficulties with instructional planning as a whole, I asked Marci if she had had an opportunity to help support Lucy with instructional planning. Very careful of her wording, she replied:

> Lucy came to us as a lateral entry. She received two weeks of lateral entry training after accepting the position. She has had the support of an entire team of instructional specialists…. I worked with her at the beginning of the school year to help her set up her classroom, centers, and her schedule. I give her as much support as I can, but she doesn't take the initiative to seek out the things, information, people …whatever she needs. The truth about special education is that you learn from trial by fire so to speak. I can relate to some of the issues she has because I came through an alternative certification, but the biggest difference is that I was motivated to keep asking until I understood or until somebody got tired of hearing me ask. That's not what is happening with this situation, unfortunately for her and her case load.

Concluding Thoughts on Participants' IEP Development

For me to determine how less experienced and more experienced special education teachers differ in developing IEP goals and objectives, the participants engaged in the task of constructing a reading goal and objectives for a simulated student case file. The data indicated both similarities and differences between participants from both experience levels. Two of the more experienced teachers developed a goal and objectives in the same

manner as one of the less experienced teachers, receiving a rating classification of "adequately developed."

To understand the similarities, participants shared their thoughts about the types of training they had on IEP development, the significance of the IEP, and how they used annual goals and objectives to plan daily instruction and provide continuity. From these discussions several issues emerged as factors that possibly contributed to the similarities demonstrated during the IEP development task.

Training. The first issue concerned the training provided to the participants on goal development. With the exception of Lucy and Lisa, all the other participants reported attending an annual training in their school district that addressed all facets of the IEP. They concurred, however, that there was little follow up on the implementation of new information at the campus level. All the participants except Lucy, reported attending preservice courses designed to teach IEP development as part of their certification requirements. While Lucy did not report attending any type of district level training or enrollment in required courses, she did mention using examples to develop goals and objectives. However, Marci who serves as the compliance facilitator at Lucy's school, indicated that all lateral entry hires attend mandatory two week training at the beginning of the school year. At the time of the study, Lucy had not yet attended the annual district level IEP training.

Implementation of strategies. The next issue pertained to how teachers learned to write goals and objectives using a specific technique mandated by the school district to ensure linkage to the general education curriculum. Only one of the participants recalled attending a training specified to the implementation of the new technique. The other five

participants recall learning to write goals linked to the curriculum by using sample goals and objectives that were circulating from school to school. They all agreed that individual schools generally decided how to implement the new technique.

Significance of the IEP. Because the construction of an annual goal and objectives is just one of many steps in the process of instructional planning, I wanted to know how participants regarded the significance of IEP goals and objectives and how they incorporated goals into the daily lesson planning. Five of the participants indicated that they felt IEP goals and objectives were significant in the learning of students with disabilities. By contrast, Lucy consistently made remarks indicating low student expectations and minimal understanding of the bigger picture in special education. Consequently, she did not regard the IEP as significant in the learning of students with disabilities. She believed the students were not capable of attaining most of the goals that she had reviewed for them. Lucy also struggled with lesson planning. Even after a lengthy discussion, little clarity was forthcoming on how Lucy used her goals and objectives in lessons or on strategies to provide continuity between the two.

Use of IEP in lesson planning. Although the manner in which the other participants engaged in lesson planning varied, they were able to articulate how they used the goals to guide instruction in lesson planning. Two of the less experienced participants (Lisa and Lori) described a natural progression in finding a useable format to address individualized goals in their planning. The more experienced participants had, over the years, developed more sophisticated ways of tying instruction to the goals. Whether by collaborative planning or an intricate number system, all participants except Lucy felt their lessons were appropriate to the specific needs of students.

Levels of Interest and Professional Involvement

The third research question guided the examination into how less experienced and more experienced special education teachers would differ in their levels of interest and professional involvement within the field of special education. Data were collected to gauge the types of domain specific activities the participants had engaged in, as well as gain insight into their levels of interest. Participants completed a 12 item interest measure as part of the pre-task questionnaire. Additionally, during the follow-up interview participants had an opportunity to address their personal interest and motivation.

On the pre-task questionnaire, participants indicated their level of interest in a range of activities relevant to the field of special education (see Appendix C). Eight of the 12 items were reflective of general interest, which is conceptually related to the enduring investment brought into any new learning situation (Alexander, 2003b). For the purposes of this study, general interest pertains to engagement of everyday type of domain-related activities (Alexander, 2004). The remaining 4 items were reflective of professional interest, being conceptually related to a more specialized, goal-oriented interest (Alexander, 2003b). Within the scope of this study, professional interest signifies a long-term investment or deep involvement in the target field of study (Alexander, 2004). Table 4.2 depicts a breakdown of participant scores on the interest measure portion of the pre-task questionnaire. Comparable to knowledge and strategy use, differences in interest levels also clustered around experience level.

Less Experienced Special Education Teachers

Participants in the less experienced category engaged in activities reflective of general interest within the field of special education. Lisa and Lori, the two less

Table 4.2

Participants Interest Measure Scores

Participants	General Interest 80 possible points	Professional Interest 40 possible points	Total Interest Measure 120 possible points
Lori	44	4	48
Lucy	14	2	16
Lisa	38	2	40
Mona	68	14	82
Maria	62	12	74
Marci	57	17	74

experienced participants who recently completed certification requirements, particularly had higher engagement in the reading of domain related articles, taking coursework, having conversations related to special education, and seeking out information on issues related to special needs populations. In addition, they also reported high engagement in serving as consultants to teachers and parents, all reflecting professional interest.

Lucy's interest measure score of 14 reflected her report of low engagement on 11 out of the 12 items addressed. Specifically, she reported very rarely engaging in volunteering; tutoring; reading articles related to special education; or seeking out information on related issues. Her highest reported engagement was in having conversations related to special education. As one would expect due to the difficulties Lucy has experienced thus far, she rated 3 out of the 4 items that reflected professional interest as not applicable. She did, however, indicate very rarely serving as a consultant to teachers and parents.

All the activities the less experienced participants rated as having high engagement in were specific to their job duties. This brings into question whether elements or features of the work environment sparked their engagement in job specific activities. During the follow up interview the participants touched on some of the motivational factors related to their job performance. Lucy offered a very honest and forthright response:

> Some days, honestly, I think it's a paycheck and benefits. But really I am used to being successful in high school and I was in the top of my class in college. I don't like to feel I'm failing…but I think this job has me beat. I'm not really interested in making special education a career per say, but the job has been good work

> experience and it will look good on my graduate school application. The bottom line is while I'm on this job I've got a thousand people in and out of my room constantly checking on my so called progress…I have to make an effort to follow the schedule, write the IEP's, write the lesson plans, teach the students, and oh, don't forget save the world too.

Lisa spoke of an overall commitment to educate the students:

> I started off wanting to teach special education because I wanted to make a difference in the lives of children with special needs. I still feel the same way, but it's not really what motivates me to write IEPs or get my lesson plans right. Really, it's all the checks and balances…the hoops you have to jump through as a first year teacher. I mean I have a lot of people coming to observe and they say it's to help, but you always feel under the gun in special education because there is just so much to learn.

Lori shared an insightful response to what motivates her to perform the demanding duties of the job:

> Last year was really rough on me…but I didn't throw in the towel. I figured from there it could only get easier or at least manageable. Mostly I try to do my best because what a lot of people don't realize is that you can be sued for not implementing goals, writing really bad goals…just about anything a parent could want to take you to court for, they have the power to do it with that IEP. The parents at my school are very savvy and what they don't know they pay someone who does know to come and make sure things are done right. I just never want to

be in a situation where I am called on the carpet for what I do on a day to day basis with the students.

The three less experienced participants shared very different reasons for executing their respective job duties. However, it should be pointed out that all of their motivations stem from conditional elements associated with the job. As such, the interest level of the less experienced special education teachers reflected both reactions to job related factors and low to moderate engagement in general interest activities.

More Experienced Special Education Teachers

Participants in the more experienced category reported high engagement in activities of general interest. By comparison, their reported engagement was higher than that reported by the less experienced participants. Further, the range of activities for the more experienced teachers was broader.

The participants reported engagement in similar types of activities. All three participants reported engaging very often in tutoring, volunteering, and holding positions that serve special needs populations. These activities typically require time above and beyond a normal instructional day. The participants also reported engaging very often in information seeking, conversations related to special education issues, reading articles, and having taken coursework in special education, all of which are directly related to their job performances.

Reported participation in activities related to professional interest varied among the three teachers. Mona and Maria reported attending professional conferences, seminars or workshops very often, whereas Marci attended very rarely. Each of the more experienced participants reported being involved in consultative roles with parents and teachers very

often. None of the teachers in this category reported publishing or conducting research specific to special education. Reported engagement of these teachers in activities related to professional interest was lower than in activities related to general interest. Nevertheless, their average engagement was six times higher than what was reported by the less experienced participants.

The interest measure completed by participants addressed two forms of individual interest: general and professional. As with the less experienced participants, I was interested in how much of the daily performance of the more experienced teachers was predicated on situational factors related to the job. During the follow up interview, the participants were asked specifically what motivates them to write what they considered procedurally correct and instructionally relevant IEP goals and objectives.

Maria explained her belief that she can make a difference in the lives of her students. She further commented:

> I've just always wanted to make a difference for these kids. I don't claim to understand all the laws and regulations that enforce special education… I just figure if I do exactly what the district wants me to do, then maybe on a good day I can reach my students and at the end of the day they have some type of educational success.

Mona attributed her motivation to a heightened awareness of changes in special education as a field. She responded:

> Special education is rapidly changing. Parents are informed and the laws keep pushing accountability. I do my best to work within the guidelines because I would never want to be in a position where I had to go through any form of

mediation or litigation. I also just genuinely enjoy teaching the students. I live for that spark you get every so often when they have a light bulb moment.

Marci revealed a few of the "many reasons" she is motivated to do aspects of the job to the best of her ability. She explained:

> To be honest it's a combination of personal and professional factors that drive me. Personally, I'm pretty sure I could be diagnosed with a compulsive disorder. While it can be a character flaw in my personal life…it works in special education. A little OCD takes you along way with making sure all the i's are dotted and the t's are crossed. All the meetings can get overwhelming but I'm the girl to get it done. On the other hand, professionally, I am very into the law and regulations and compliance…everybody has their strength and that just happens to be mine. Don't get me wrong; while I enjoy that…I equally enjoy teaching the kids. I love teaching. It's so much more fulfilling that any other career path I've embarked on. I get it right for them as well.

The more experienced special education teachers reported a richer repertoire of activity engagement than did the less experienced teachers. Their comments revealed that their job performance is directly related to a dedication to career choices as well as the legal ramifications associated with the field of special education.

Alignment with the Model of Domain Learning

The fourth and final research question guided inquiry into how the knowledge representation and strategic processing, demonstrated by the less experienced and more experienced special education teachers during the domain specific task of IEP development, would align with the predicted stages of expertise development in the

Model of Domain Learning (Alexander, 1997). Data were collected to determine at what stage along the continuum of expertise development each participant would place according to the knowledge and strategic processes she demonstrated. Moreover, the role of interest was a consideration in determining placement on the continuum. To guide the determination of placement, an alignment checklist (See Appendix J) was completed for each participant. All the codes from the final coding scheme for the verbal data were categorized within the MDL stages of development. The total number of codes per category was tallied for each participant. The alignment checklist served as a means of organizing a large quantity of participants' data. In conjunction with multiple data sources, an approximate stage of development was determined for each participant.

According to the model predictions, the interplay between knowledge, strategic processing, and interest level of a learner manifests differently across three stages of development: acclimation, competency, and proficiency or expertise (Alexander, 2003b). The subsequent section will discuss each stage of development that was consistent with the performances of the less experienced and more experienced teachers.

Acclimation Stage of Development

Within the acclimation stage of development learners are characterized by fragmented knowledge of domain related topics, dependence on strategies that permit them to make sense of written content, and limited individual interest in the domain. When presented with the domain specific processing task of developing an IEP, the less experienced participants in this study demonstrated knowledge and strategic processing consistent with the theoretical premises of the acclimation stage of development.

With regard to the alignment checklist, Lucy received the highest number of codings under the category of acclimation. Lucy's task performance was consistent with that of a learner in early acclimation. As previously discussed, her knowledge of basic special education concepts was severely limited. She was unable to ascertain relevant student information or reach appropriate conclusions on the relevance of the provided data. Her strategic processing included verbatim reading, restating directions, and identifying what normally happens during engagement of the task. These types of strategies are commonly used by learners to make sense of a text that they try to comprehend, or in Lucy's case, a task she was trying to understand. Meantime, Lucy's annual goal and objectives received a rating classification of "poorly developed." Both her annual goal and objectives lacked technical adequacy and instructional relevance. Her performance denoted an underdeveloped knowledge of topics or concepts specific to the domain of special education. Based on the interest measure and corroboration from her statements, Lucy's interest level would be considered situational. According to the MDL, situational interest describes a temporary attention triggered by conditions within the immediate environment. Hence, Lucy relies on the avoidance of certain situational factors associated with her job to sustain her attention to more complex tasks like IEP development and lesson planning.

Lisa also exhibited behaviors consistent with the acclimation stage of development. However, there were some marked differences between Lisa and Lucy's performances. While Lisa's overall knowledge base lacked a principle structure, her additional strategies, like the identification of key information from each assessment and rereading portions of the data to locate specific components, suggested further

advancement within the acclimation stage of development stage. However, Lisa's annual goal and objectives were neither technically adequate nor instructionally relevant and also received a rating classification of "poorly developed." Her selection of student expectations from the general education curriculum guide, however, was at least connected to the student's present level of performance. Lisa reported low levels of individual interest and associated her motivational factors with job related circumstances.

Lori was the most developed of the less experienced participants. Based on her overall performance across various steps in the development of an IEP annual goal and objectives, Lori placed at the latter end of the acclimation stage as described in the MDL. Lori exhibited a fundamental understanding of the multiple data sources. She was able to decipher the relevance of information, indicating an early conceptualization of topic knowledge specific to special education. Her repertoire of strategies was more developed, including note-taking and, in some cases, activation of prior knowledge. Even though Lori's knowledge representation had evolved beyond isolated chunks of information, she consistently lacked integration across the diverse elements and relationships presented in the assessment data. Her annual goal and objectives received a rating classification of "adequately developed." Lori was able to include some components of instructional relevance and technical adequacy, indicating that she at least understood the connection between the two concepts and the overall quality of a well developed IEP. Among the less experienced participants, Lori reported the highest engagement in job related activities associated with general interest. She attributed her motivation to conditional factors associated with her job performance.

Although the participants in the less experienced category placed at different points along the trajectory of expertise development, their demonstrated behaviors were consistent with predicted learner expectations at the acclimation stage, as described in the MDL. The interplay of knowledge and strategic processing was evident in their task performances; as foundational knowledge increased strategic processing moved beyond simplistic techniques to include strategies that allowed for a deeper level of meaning to be extracted from the text.

Individual interest (general and professional) was gauged by a self-report, while interview responses addressed levels of situational interest. As such, the role of interest in the knowledge states and strategic use could only be speculated upon. However, the statements from each of these participants did suggest that they were motivated to engage in job related activities by environmental factors directly associated with their job performance.

Competency Stage of Development

According to the MDL, learners are propelled into the competency stage of development by a shift in their knowledge bases. Not only do learners at this stage demonstrate a foundational body of domain knowledge, they also increased cohesiveness within that knowledge base that allows them to attain familiarity with domain specific tasks. When presented with the domain specific task of developing an IEP annual goal and objectives, two of the more experienced special education teachers demonstrated knowledge and strategic processing consistent with the theoretical premises of the competency stage.

Two of the more experienced participants placed within the competency stage of development. Maria and Mona both exhibited well developed foundational knowledge bases and were able to maneuver through multiple data sources. Both were able to exhibit a familiarity with problem solving tasks typifying the domain of special education. Mona demonstrated a stronger integration of her knowledge base. She was able to use higher level strategies to create integrated linkages to the general education curriculum. Maria was not able to demonstrate the same type of strength in her curricular knowledge. Based on her verbal responses, it was difficult to determine if Maria's curricular knowledge was impacted by a lack of understanding or by her position on using a specific technique to ensure linkage to the general education curriculum. Regardless, this impacted her goal development as indicated by a rating classification of "adequately developed."

Surprisingly, Mona also received a rating classification of "adequately developed." Both Maria and Mona wrote annual goals that were appropriate in scope and connected to the students' present level of performance. Their objectives, however, were written verbatim from the curriculum guide; resulting in objectives that were not individualized, lacked components of technical adequacy, and measured more than one skill. The demonstrated performances of Mona and Maria resulted in examples of how goals and objectives can be instructionally relevant even in the absence of technical adequacy.

Although Maria reported lower engagement in general and professional interest activities than Mona, they both spoke of personal commitments to the education of students with disabilities. Their statements, coupled with more than ten years of service, suggested a long-term investment in the field.

Overall, interactions between knowledge and strategic use of processes for these more experienced special education teachers corresponded with the predictions of the MDL. Mona's domain and topic knowledge yielded the usage of deep processing strategies that enabled her to integrate information across multiple data; this is reflective of learner expectations in the middle range of the competency stage of development. While Maria displayed well structured domain knowledge, her topic knowledge, specifically her curricular knowledge, was not as developed. This hindered her ability to create those integrated linkages and served as a possible indication that Maria may place at an early phase within the competency stage.

The MDL describes an association between learners' knowledge, strategic processing, and level of interest. The acquisition of knowledge is supported by the ability to apply strategies, and the application of strategies is supported by interest in the domain. In the competency stage, there should be an increase in a learner's individual interest, resulting in a decreased reliance on situational factors to sustain knowledge and strategic processing (Alexander, 2003b).

In this study, interest was not measured during participants' performance on the domain specific task. Therefore, any conclusion drawn concerning the relation between interest and the demonstrated knowledge and strategic processing of the participants is at best speculation. However, the more experienced teachers did attribute their job performance to a dedication to career choice, in addition to job related factors.

Marci demonstrated the strongest skills of the three more experienced participants. Throughout the entire IEP development process, Marci consistently presented a broad and deep knowledge base. She was well versed in the methodology of

the domain and understood intricate concepts that were embedded across multiple data sources. Her repertoire of strategic processes included skills like critiquing the relevance of data and performing integrated analyses of all data. Her engagement of the problem solving process was fluid, indicating an understanding of how to corroborate findings, validate performance and create linkages to the general education curriculum.

More evidence of the depth and breadth of her knowledge showed in Marci's annual goal and objectives. She received a rating classification of gold standard. Her annual goal and objectives met all criteria to be considered technically adequate, instructionally relevant, and educationally beneficial to the specific student for which they were designed.

The interactions between Marci's knowledge and deep processing strategies are more consistent with learner expectations in the high level of competence or proficiency stage of development. As described in the model, the proficiency stage of development requires not only high levels of knowledge, but also markedly high levels of active engagement in professional activities and problem finding that would result in the creation of new knowledge within a given domain (Alexander, 2004). While Marci scored the highest on reported engagement in general and professional interest activities among the more experienced participants, her statements did not reflect an interest in engaging higher level problem solving that could result in the creation of new knowledge. Without the culminating interest level, her performance was more reflective of the latter end of the competency stage of development than the proficiency stage.

Concluding Thoughts on Alignment with the MDL

Overall, this research question highlighted important differences between the participants along a continuum of development described in the MDL. The examination of the less experienced participants' behaviors during the domain specific task of developing an IEP annual goal and objective afforded insight into the acclimation stage of development. Demonstrated differences spanned three distinct phases within the acclimation stage. Lucy depicted many of the traits associated with early acclimation. Her foundational knowledge was latent and her strategic processing was restricted, which resulted in a limited and fragmented understanding of the embedded relationships within and across multiple data sources. By comparison, Lisa exemplified behaviors consistent with an intermediate learner in the acclimation stage. With an increased usage of surface level strategies, she pieced enough of her fragmented knowledge together to understand the underlying premise of the domain specific task. Lori illustrated the last distinct phase. Demonstrating a well developed foundational knowledge, Lori's behaviors were consistent with the latter phase of acclimation. As such, it appears that the demonstrated learner behaviors across knowledge and strategic processing did align with the predicted behaviors at the early, middle, and latter phases of acclimation as described in the MDL.

The examination of the more experienced participants' behaviors during the domain specific task of IEP development afforded insight into the competency stage of development. Again, the participants reflected three distinct phases of competence. While they exhibited well developed domain knowledge and a repertoire of strategies, Maria was lacking in her topic knowledge, suggesting early competence. Mona demonstrated both a well structured domain and topic knowledge and a higher level of deep processing

across multiple data sources. However, there was little evidence of transferring this knowledge into the development of a technically adequate annual goal and objectives, reflecting a midpoint in the competence stage of development.

Lastly, Marci demonstrated knowledge and strategic processes characteristic of the proficiency stage of development. The absence of professional interest rendered her task performance more consistent with that of a learner in the later stages of competence. Thus, it appears that the demonstrated learner behaviors across knowledge and strategic processing did align with the predicted behaviors at the early, middle, and late phases of competency as described in the Model of Domain Learning.

Conclusions

In sum, the findings related to the guiding research questions in this study offer insight into how special education teachers who differ in experience executed the decision making process involved in the domain specific task of IEP development. The following section offers a discussion of general findings and how those findings support conclusions drawn from previous research studies relevant to the study of expertise development, IEP development, and the utility of MDL in describing stages of expertise development.

Expertise Development

Many of the findings provided evidence to support the conclusions of previous research studies. Explication of the decision making process involved in IEP development yielded observations supporting several propositions garnered from third generation expertise development studies. These included: a) between the extremes of novicehood and expertise lies a spectrum of subtle systematic changes that occur within

and across multidimensional characteristics of the learner (Alexander, 1997, 2003a, 2004; Berliner, 2005); b) in addition to cognitive attributes, motivational factors are intrinsic to movement toward expertise development (Alexander, 1997, 2003a, 2004); and c) indicators of expertise will have far reaching implications for improved teacher education and performance (Darling-Hammond, 2000; Doyle, 1990).

IEP Development

Data from the actual IEP annual goals and objectives written by the participants supported conclusions drawn from research on IEP development. Specifically, the annual goals and objectives written by the participants solidified the existence of the following difficulties: a) lack of congruency between a student's present levels of performance and instructional goals and objectives (Reiher, 1992; Smith, 1990b); b) goals and objectives written with insufficient technical adequacy (Youtsey, 2003; Nolet & McLaughlin, 2005) and c) misinterpretations of the general education curriculum (Fisher & Frey, 2001; McLaughlin & Warren, 1995; Walsh, 2001; Yell, 1998). Based on these difficulties, there is a continuing need to prepare teachers with the necessary technical skills and curriculum knowledge needed for instructional planning within the realm of goal development.

Further, contrasts between less experienced and more experienced special educators support the contention that there was not a consistent, direct relationship between years of experience and the procedural integrity of the developed IEP goals and objectives. Particularly for inservice trainings, this means professional development opportunities specific to IEP development can not be developed on the assumption that a teacher with many years of experience will automatically write an IEP that is

instructionally relevant and procedurally correct. Contemporary models of professional development that are "ongoing, intensive, and supported by modeling, coaching and the collective solving of specific problems with implementation," (Darling-Hammond, 1995, p. 598) will need to be utilized to ensure that special education teachers benefit from being actively engaged in the learning process and are allowed time to plan how to implement new IEP procedures.

MDL

The data proved the utility of the MDL (Alexander, 1997) in describing the demonstrated knowledge and strategic processes of special education teachers across two stages of expertise development. There was documentation of alignment between the predicted behaviors of learners at the acclimation and competency stages of the MDL, and the exhibited behaviors of the participants during the domain specific task of IEP development. Despite the fact that the construct of interest was not directly measured during engagement in the domain specific task, themes that emerged from the responses of the participants were indicative of the differing interest levels described in the MDL. However, the specific role of interest during the domain specific task was beyond the scope of the study.

Within the domain of special education, instructional development has been found to have a direct association with the integrity of services received by students with disabilities (Shriner & DeStefano, 2003). Overall, this study sheds light on the specific knowledge base and strategic processes that special educators need to effectively develop instructional goals and objectives for students with disabilities. The quality of teacher

expertise is indeed pertinent to teacher effectiveness (Borko & Livingston, 1989; Darling-Hammond, 2000; Schempp et al., 1998; Swanson, O'Conner & Cooney, 1990); the MDL offers a well conceptualized understanding of how expertise emerges and a full description of expected behaviors across the trajectory of development during domain specific tasks. It also offers implications for research in special education teacher development, which will be discussed in a later section.

Limitations

With all forms of research limitations should be considered. In chapter three, issues related to the potential bias of the researcher were examined. Additional methodological limitations that were encountered during the course of the study are addressed next. Specifically, these relate to limits associated with the use of interviews, data collection forms generated for the purpose of this study, and the role of interest as a mitigating factor in the performance of the participants during the domain specific task.

Interviews

Engagement in the domain specific task of IEP development was observed and recorded during the verbal protocol sessions. This resulted in accurate transcriptions of each participant's dialogue and documentation of behaviors not verbalized. To gain understanding of why participants made the choices that they made during the decision-making process of instructional development, a follow-up interview was conducted.

According to Isaac and Michael (1997), there are inherent limitations with the use of verbal data. First, there was the potential that the participants did not accurately recall prior experiences they drew upon during the interviews. Secondly, there was the probable risk that the information shared by each participant was biased by personal opinions.

Lastly, given the personal contexts surrounding job performance, some of the participants could have overstated or exaggerated accounts of their experiences.

The credibility and trustworthiness of the interview data were enhanced by the use of the following techniques: triangulation of data; peer debriefing; and member checks. In addition to the interview data, additional data sources included audiotapes of participants' verbalizations during the IEP task, observation notes, data collection forms, and permanent products. The critical examination of these multiple data sources allowed verification of information that was collected during the follow-up interviews. Additionally, throughout the duration of the study, I established constant dialogue with professional colleagues who were directly involved with IEP development and were familiar with the special education policies and procedures specific to the employing school district of the participants. Member checks were an integral component in countering the limitations associated with verbal data, as well. After the follow-up interviews, I engaged each participant in clarifying questions to validate what I thought the participant meant by a statement. Member checks helped me ensure not only the accuracy of their statements, but also aided contextual interpretations.

Data Collection Forms

IEP rubric. Data collection forms were developed for the purpose of this study. Specifically, the IEP rubric was created to make determinations concerning the quality of the IEP annual goals and objectives that were written by the participants. Construction of the rubric was based on relevant research that identified problematic areas of IEP development (Fisher & Frey, 2001; McLaughlin & Warren, 1995; Nolet & McLaughlin, 2005; Reiher, 1992; Smith, 1990b; Walsh, 2001; Yell, 1998; Youtsey, 2003) and

addressed standards of instructional relevance and technical adequacy. The IEP rubric, however, was not able to capture one of the problematic areas that occurred with a degree of regularity. Under instructional relevance of the objectives, a score was assigned for the degree to which the benchmark reflected general education curriculum standards, as measured by the language the objectives were written in. However, participants' use of verbatim language from the curriculum guides was not anticipated and therefore not reflected in the actual scoring. While the IEP rubric was not sensitive enough to capture all possibilities involved in the development of an IEP annual goal and objectives, the existence of these differences were verified through participants' verbalizations during the task, interview data, and the written IEP.

Interest measure. Another form that was used in the study was the interest measure. The interest measure was used in a previous study of the MDL (Alexander, Sperl, Buehl, Fives, & Chiu, 2004) in the domain of special education. It was constructed to reflect activities relevant to the domain of special education and capture the general and professional interest levels of those particular participants. The assumption was made that because the focus domain of both studies was special education, the interest measure would be sufficient to capture the interest levels of the present study's participants. Reflective synthesis of the interest level data and participants' statements, however, revealed that the interest measure may not have addressed activities reflective of general and professional interest of the specific population of participants used in this study.

The first indicator of this mismatch had to do with the specific population. In the Alexander (et al., 2004) study, the population of participants included general education undergraduates, special education undergraduates, special education graduate students,

and special education faculty. This selection of participants represented a spectrum of difference across the development of expertise in the domain of special education, where the culminating point of expertise was a university professor or researcher (Alexander et al., 2004). In the present study, the population of participants ranged from less experienced to more experienced special education teachers, where the culminating point of expertise was to be a skillful special education teacher.

Therefore, the general and professional interest of a proficient teacher probably would have been better measured by engagement in activities that were more specific to teaching. This does not suggest that all the items on the interest measure were inadequate in capturing interest relative to special education, but rather there may have been additional activities that would have provided a clearer indication of participant interest as it pertained to a chosen career path and possibly yielded different participant profiles.

In retrospect, only further modifications to the interest measure itself could counter the limitations presented by its use. However, this limitation does offer implications for further research on developmental profiles across multiple career paths within the domain of special education.

Interest as a Mitigating Factor

Within the Model of Domain Learning (Alexander, 1997) the model predictions are based on the interrelations of a learner's knowledge, strategic processing, and interest. Each stage of development described in the model is characterized by different interactions between the three components. In the present study participants completed an interest measure as part of the pre- task questionnaire. The major focus of this measure was general interest, reflected by engagement in domain-related activities, and

professional interest, reflected by engagement in more specialized, goal oriented activities (Alexander, 2003b). Participants also answered the question of what motivated them to write procedurally correct IEP goals and objectives. Their responses provided insight into the existence of situational interest. However, data were not collected that specifically addressed the role of interest during participant engagement of the domain specific task of IEP development. While interpretations of reported interest levels were made, the ability to draw conclusions about the interaction of interest with the knowledge and strategic processing of each participant was beyond the scope of the study.

In reflecting upon the role of interest, several points should be made. First, the nature of special education as a domain is change. The participants repeatedly commented on the changes in policy, procedures, and strategies related to educating students with disabilities. This makes a strong case for studies that examine the role of interest in sustaining special educators during multiple transitions within the field. Secondly, as in the Alexander (et al., 2004) study, a broad measure of interest was used to gauge participant engagement in domain specific tasks. In the present study this broad measure limited the ability to capture the type of investment or interest in the specific task of IEP development, thereby necessitating a need for future research on better measures of interest at the global and task specific levels.

The rich descriptions of participant engagement in this study granted access into how less experienced and more experienced special educators executed the decision making process during the domain specific task of IEP development, even in light of these limitations. The participants demonstrated revealing insights into the unique personal contexts in which they approached the task. Their realities bring into play many

questions concerning teacher preparation for special educators and professional development opportunities. Implications for further research derived from this study will be discussed next.

Implications

Several discoveries concerning the a) knowledge, skills, and practices of special education teachers; b) professional development; c) the state of IEP development; and d) the utility of the MDL emerged from a synthesis of data. Drawing heavily upon the data from this study and previously reviewed research, these discoveries contribute to an ongoing discussion of special education teachers' education and implications for future research.

Knowledge, Skills, and Practices

As the literature reveals, there is little research on the pedagogical knowledge of special education teachers in comparison to that of general education teachers (Blanton et al., 2003; Brownell, Ross, Colon, & McCallum, 2003; Stough & Palmer, 1996). While data from the present study made intricate descriptions of the knowledge of these special educators, they study was limited to six participants. Future studies must determine how overall teacher knowledge, skills, and practices across experience levels affect student and teacher outcomes. It has been documented that while general and special education teachers possess a similar repertoire of instructional strategies, special education teachers possess a more elaborate organization of knowledge from which to activate interpretations and problem solving in reference to students with learning problems (Blanton, Blanton & Cross, 1994). As such, there is a great need to investigate the specific bodies of knowledge needed in special education practice.

In the present study, three participants started their teaching careers via an alternative certification program and three participants received training through traditional four-year programs. This brings into question the role of differences in preservice preparation. Additional research is needed not only to determine how course work and field experiences contribute to beginning special education teacher practice, but also to determine if the prescribed practices used in training programs help beginning teachers to acquire and apply that content.

Another critical point concerning the knowledge, skills, and practices of special education teachers is related to understanding the role of stability and change in the developmental stages of the participants. Can one assume that because a teacher performs at a level of proficiency on one task that she will perform that way on all instructional tasks? In the present study, participants developed reading goals. Would Marci have fallen in the latter part of the competency stage if the task had been related to the content area of math?

Early developmental models of expertise recognized a trajectory towards expertise, but assumed stability at each stage in the progression with little regard for the influences of environmental factors within the context of classrooms (Rich, 1993). While the MDL and other 3rd generation models recognize the potential effects of context and motivation in general, they do not specifically address the notion of stability within each stage of development. The possibility of stability and change within a stage of development may prove to be important for a comprehensive understanding of teacher expertise. Further studies of these types of differences across content areas, different

categories of disabilities, and types of delivery service models in special education are well warranted.

Lastly, connecting a developed IEP to actual daily instruction offers implications for teacher programming that will increase the knowledge, skills, and practices of special education teachers. A recurrent theme during the study was the notion of continuity between the actual IEP goals and objectives and daily instruction. While the participants in this study provided detailed descriptions of how they incorporated actual student IEPs into their daily lesson planning, sample lesson plans were not collected and the degree of connection could not be established. However, insight into the level of connectivity between the two would be beneficial in identifying weaknesses and areas of training that would facilitate a continuity of services across developed IEP goals and specialized classroom instruction.

Professional Development

Based on the participants in this study, several suggestions for professional development opportunities can be made. Professional development is considered an essential mechanism for deepening teachers' content knowledge and fostering effective teaching practices (Desimone, Porter, Garet, Yoon, & Birman, 2002). As such, all the participants in this study would benefit from general education curricular trainings. These trainings would support connections that special educators must make to the general education curriculum across multiple grade levels and content areas.

Most importantly, the participants would benefit from additional training on specific strategies employed by their school district to meet IEP compliance standards, such as "backmapping." Often times the descriptions of what the participants called

backmapping did not reflect the true intent of "trellising" or "backmapping" as described in the literature (Youtsey, 2003).

Schools and districts often have to make a difficult choice between sponsoring shorter, less in-depth training that serves a large number of teachers like the annual IEP training described by the participants, or the more effective and focused opportunities like the IEP training for compliance facilitators described by Marci. Nevertheless, if professional development efforts are to be successful they must include collective participation across all schools within a district, and active learning activities that embed higher order instruction and alternative assessment methods.

The complexities of special education necessitate continuous innovation in teacher preparation to support both new and veteran teachers in the field. Local education agencies will have to revamp inservice opportunities to include contemporary models of professional development. Best practices suggested by these models will engage teachers in the learning process and support implementation of new skills.

The State of IEP Development

The development of a student's individual education plan (IEP) is one of many tasks exclusive to special education settings. Used to define an individually tailored instructional program (Lignugaris-Kraft, Marchand-Martella, & Martella, 2001), the IEP is critical in guiding students with disabilities towards meeting expected learner outcomes. Although the mandate regarding IEP development is federal, it is up to each state education agency to determine how to specifically meet this mandate (Yell, 1998). Data from the present study documented the use of particular strategies utilized by the employing school district of the participants to comply with federal mandates. However,

the synthesis revealed problems with the implementation of these strategies. Districts must improve in understanding interrelations between beginning teacher support, professional development opportunities for inservice teachers, and contextual variables specific to particular practices in special education on IEP development.

Utility of the MDL

Since the mid-1980's there have been a spate of national reform reports focusing on the quality of teacher preparation programs and offering numerous recommendations for teacher education reform (Brownell, et al., 2003). It is important, however, to recognize this observation. If teacher preparation programming based on federal reforms is to be effective in moving teachers along a continuum of competence in the facets of special education, a well-conceptualized understanding of how expertise develops and a detailed description of the behaviors that constitute the domain specific task will be required (Alexander et. al, 2004).

It is clearly documented here that the demonstrated behaviors during the IEP development task were consistent with predicted learner behaviors across the acclimation and competency stages of development. Beyond the theoretical significance of the model predictions, the MDL offers implications for educational practices in special education teacher preparation. Especially important is the value it holds for individuals who, like Lucy, display limited knowledge, little interest, and insufficient strategic processing. When programming is built upon domain specific knowledge and strategic processing across stages of development, beginning teachers who are having difficulty acclimating to a domain would be supported with guidance in building foundational knowledge, explicit instruction on how to operate strategically within a domain, and assistance in

building necessary motivation that should allow them to persist in the complexities of a given domain (Alexander, 2003b, 2004). Given the preliminary benefits of the MDL, there is a need to investigate the effectiveness of educational interventions for special educators based on the premises of the model (Alexander et al, 2004).

The needs in special education teacher education are complex; beginning teachers are expected to play many different roles and serve students with diverse needs. Alongside existing complexities, the essence of special education as a disciplinary domain is changing and experienced special educators are expected to incorporate elements of change frequently in the absence of much needed support. To this end, a research agenda in special education that recognizes the benefits of teacher programming based on a developmental progression in learning would bridge the apparent gap between isolated teacher standards and effective implementation and practice.

Appendix A

Letter of Introduction

My name is Marva Gavins, I am a doctoral student at the University of Maryland, College Park, and am conducting my research in the Montgomery County Public Schools. My study examines factors involved in the development of individualized education plans for students with disabilities by more experienced and less experienced special education teachers. The IEP was designed as a tool to ensure appropriate educations for all students with disabilities. Understanding the strategies and processes teachers use in instructional planning for students with disabilities is vital to preparing preservice special education teachers and providing support systems for inservice special educators.

As part of the selection criteria, your special education supervisor and school administrator nominated you. I am requesting your participation in my study. Participation in the study will require about an hour of your time to complete a consent form, questionnaire, and a think aloud protocol. A follow up interview will be conducted that will require 15 to 20 additional minutes of your time. As a thank you for your participation you will receive a local **teacher supply gift certificate** worth **$35.00**

Scheduling is flexible and the sessions can be held at a location that is convenient for you. I will be contacting you by phone to gauge your interest to participate and schedule a session. I have enclosed contact information for the project faculty advisor and myself. Please feel free to contact us for any questions concerning the study.

Appendix B

Consent Form

Informed Consent Form

Project Title: IEP development as a function of experience in special education teachers

Purpose: This is a research project being conducted by Marva Gavins, a doctoral student at the University of Maryland, College Park. The research is under the supervision of Dr. Karen Harris. We are inviting you to participate in this research because your special education supervisor and campus administrator nominated you. The purpose of this research is to describe the strategies and processes used to develop IEP goals and objectives as it relates to the level of experience of special education teachers.

Procedures: The procedures of this study involve completing a short questionnaire, a think aloud protocol and a follow up interview. The think aloud protocol will take approximately 40-60 minutes. The follow-up interview will take approximately 15-20 minutes. The think aloud task will be audiotaped and videotaped.

Confidentiality: In order to keep your personal information confidential, the following steps will be taken: (1) Upon completion of all data collection your name will be removed from all data files and questionnaires and replaced with a numerical id; (2) No person other than the researcher, Marva Gavins, will have access to the documents that contain any personal identification information (i.e. consent form; questionnaire) and (3) All data collected during the study will be destroyed upon completion of they study.

This research project involves making an audiotape of the think aloud protocol and an audiotape of the follow up interview. This is necessary only to establish credibility of the transcriptions and fidelity of the think aloud protocol. The videotaping will allow for understanding which resources were used the most during the think aloud protocol. An independent transcriber, who will have no knowledge of the purpose of the study, will listen to the audiotapes to establish credibility of the transcriptions.

___ I agree to be audiotaped during my participation in this study
___ I do not agree to be audiotaped during my participation in this study

Risks:	There are no known risks for you if you participate in this project
Benefits:	This research is not designed to help you personally, but the results may help the investigator learn more about how experience impacts the instructional planning that is involved in developing IEP goals and objectives. We hope, that in the future preservice and inservice special educators might benefit from this study through improved understanding the role of instructional planning in the achievement of students with disabilities.
Compensation:	You will receive a $35.00 gift certificate to a local teacher supply store, as a thank you for your participation in this study.
Freedom to Withdraw:	Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you are otherwise entitled.
Questions:	This research is being conducted by Marva Gavins at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Marva Gavins at: 240 305-2014; 704 596-3701 or mvgavins@yahoo.com You may also contact Dr. Karen Harris at: Peabody College Box 328 Vanderbilt University Nashville, TN 37203 615 343-6686 office 615 343-1570 fax Karen.harris@vanderbilt.edu If you have any questions about your rights as a research participant or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; irb@deans.umd.edu; 301-405-0678.
Statement of Age and Consent:	I state that I am at least 18 years of age; the research has been explained to me; my questions have been answered; and I freely and voluntarily choose to participate in this research project.

I understand that by participating in this survey I agree with the above statements and give my informed consent.

_____
Name of Participant (Please Print)

_____ _____
Signature of Participant Date

Appendix C

Pre Task Questionnaire

1. Name:_____ **2.** Date:_____

3. Age:_____ **4.** Sex: **Male / Female** (please circle one)

5. Race/Ethnicity (**check all that apply and specify where appropriate**):

___ Black (not Hispanic) ___White ___Latino/a

___Asian or Pacific Islander ___Native American

___Other (please specify)_____

6. Please indicate your highest level of education:

___ Bachelors Degree ____ Masters Degree ____ Doctoral Degree

___ Bachelors Degree + 30 ____ Masters Degree + 30

___ Some graduate school

7. Please indicate your area of certification:

___ K-6 generic special education ___K-6 general education ___ESOL

___ K-12 generic special education ___K-12 general education ___Severe and Profound

8. Please indicate how you obtained your certification:

___ four year college program ___alternative certification program ___masters degree

9. At this time, have you met your school districts' criteria for Highly Qualified?

___Yes ___No

10. Please indicate the delivery service model you currently use:

___resource support as pull out ___resource support as plug in ___full inclusion

11. Please indicate which type(s) of disability you instructionally plan for with your current case load:

___Specific Learning Disability ___Emotionally Disturbed ___Other Health Impairment

___Speech/Language Impairment ___Multiple Disabilities ___Developmental Delay

___Mental Retardation ___Autism ___Traumatic Brain Injury

For each of the following items indicate the degree to which you have participated in the described activity by placing an X in the appropriate box. How often have you:

12. Read articles related to special education?

Very Rarely									Very Often	Not Applicable

13. Volunteered for programs aimed at individuals with special needs?

Very Rarely									Very Often	Not Applicable

14. Tutored individuals with special needs?

Very Rarely									Very Often	Not Applicable

15. Attended professional conferences/seminars/workshops related to individuals with special needs?

Very Rarely									Very Often	Not Applicable

16. Taken courses in special education?

Very Rarely									Very Often	Not Applicable

17. Taught in a formal special education setting (a school/facility/classroom)?

Very Rarely									Very Often	Not Applicable

18. Published work on the topic of special education?

Very Rarely									Very Often	Not Applicable

19. Sought out information on issues related to the special needs population?

|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____| |_____|

Very Rarely — Very Often — Not Applicable

20. Held a position serving the special needs population?

|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____| |_____|

Very Rarely — Very Often — Not Applicable

21. Participated on a research team that conducted research related to special education?

|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____| |_____|

Very Rarely — Very Often — Not Applicable

22. Served as a consultant to teachers, parents, and/or community groups on the topic of special education?

|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____| |_____|

Very Rarely — Very Often — Not Applicable

23. Engaged in conversations related to special education?

|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____| |_____|

Very Rarely — Very Often — Not Applicable

Appendix D

Written Directions for Think Aloud Protocol

Introduction to a "think aloud"

In this study I am interested in what you think to yourself as you perform certain tasks you will be given today. In order to understand how you are thinking during your task, I will ask you to think aloud as you work on the problems. What I mean when I say think aloud is that I want you to say out loud everything that you think to yourself silently. If you are silent for any length of time I will remind you to keep talking. Do you understand what I want you to do?

Instructions for Practice Problem #1

Before we begin the think aloud protocol, we will start with a couple of practice problems. I want you to think out loud as you solve the problems. First I will ask you to think aloud while you multiply two numbers in your head.

Instructions for Practice Problem #2

Now I would like for you to solve an anagram. I will show you a card with scrambled letters. It is your task to find an English word that consists of all the presented letters. For example, if the scrambled letters are OBRNW, you may see that these letters spell the word BROWN. Please think out loud while you solve the following anagram.

Instructions for the Think Aloud Protocol

You are being presented with a simulated student confidential file, which contains all documents pertaining to the student's academic profile and the identification of any disability that may be impacting school performance. The

student's present level of performance is provided for you, as well as identified strengths and areas of need. Your task is to prepare a draft IEP goal in the content area of reading as if you were preparing for an evaluation meeting. You should review the documentation, and, based on the provided data, develop one annual goal and the appropriate objectives/benchmarks that will lead to mastery of the annual goal. I am requesting that you develop an IEP goal and subsequent objectives/benchmarks that are what you would consider to be reasonably calculated and educationally beneficial to the targeted student. You may use any documentation from the simulated file as well as the curriculum guides to aid you in this task.

I am asking you to "think aloud" continuously while you engage in this task. Please remember that is very important to say everything that you are thinking while you are working on this task.

Appendix E

Practice Think Aloud Activities

Practice Problem #1

I want you to think out loud as you solve the problem. First I will ask you to think aloud while you multiply two numbers in your head. The numbers are 24 times 34.

24 X 34 =

Practice Problem #2

Now I would like for you to solve an anagram. I will show you a card with scrambled letters. It is your task to find an English word that consists of all the presented letters. For example, if the scrambled letters are OBRNW, you may see that these letters spell the word BROWN. Please think out loud while you solve the following anagram.

ETDICISNRMAI

Appendix F

Simulated Student Confidential Folder

Contents:

Student Vignette

Johnny X is an eight-year-old African-American male child. He has attended Blue elementary school since kindergarten. He is currently in a general education third grade classroom. Johnny resides at home with both parents and he is the youngest of three children. There is a history of learning disabilities in his family, as both his older sister and brother have both been diagnosed with learning disabilities and received services through the current school district. The family speaks Creole at home, however English has been determined to be Johnny's primary language.

Johnny's educational history indicated that he has consistently demonstrated academic performance below grade level expectations. He did not meet end of the year benchmarks for reading or math in kindergarten, first or second grade. Teachers are concerned because Johnny also has difficulty focusing on tasks, and despite general education classroom modifications, he has shown little progress in reading since the beginning of the school year. Teachers report he has good oral communication skills, but often has difficulty understanding and following verbal directions. He demonstrates extreme difficulty with decoding skills. His comprehension of reading material is impacted by his inattentiveness, deficiencies in decoding and a lack of organization in his writing.

Division of Programs and Services
Department of Special Education
Office of Instruction and Program Development
XXXXXXXXXX XXXXXX PUBLIC SCHOOLS
Report of Psychologist

Student Name: Johnny X
Student ID: 000001
Grade: 3.6
Age: 8.8
Gender: Male
Primary Language: English
Date of Birth: July 14, 1997

School: Blue Elementary
Referral Date:
Evaluation Date(s): 12/21/05; 1/04/06

Date of Report: February, 2006
Parent/Guardian:
Address:
Phone Number(s):

ASSESSMENT TECHNIQUES UTILIZED:

Student Interview
Classroom Observation
Review of Cumulative Folder
Bender Gestalt
Human Figure Drawing
Wechsler Intelligence Scale for Children-IV (WISC-IV)
Wide Range Assessment of Memory and Learning (WRAML)
Developmental Neuropsychological Assessment (NEPSY) – Phonological Processing subtest
Behavior Assessment System for Children – Teacher Rating Scales
Behavior Assessment System for Children – Parent Rating Scales

REASON FOR REFERRAL:

Johnny is a third grade student at Blue Elementary School who has been referred for psychological assessment as part of a general evaluation of possible needs for special education services. Johnny has significant difficulty with reading decoding and comprehension. Despite small group instruction for reading and language arts, Johnny continues to perform below grade level.

BACKGROUND INFORMATION:

Background information was obtained through a review of school records. Johnny was born six weeks premature, but attained developmental milestones at expected ages.

Johnny has generally good health, is energetic and enthusiastic about school. His parents describe him as flexible, cooperative, athletic, and overactive. The mother feels that he has difficulty with organization and attention. She also notes problems with memory, even in his karate class. There is a family history of learning problems. Both siblings have been diagnosed with learning disabilities. The family speaks Creole in the home,

however, Johnny has never been identified as in need of ESOL services. ITP testing, conducted prior to this evaluation, confirmed the impression that Johnny does not need a bilingual assessment. Johnny did attend headstart at White Elementary School. He has attended Blue Elementary for kindergarten thru third grade. During kindergarten, Johnny had difficulty with sight words, letter-sound relationships, and phonemic awareness. Problems with attention were also noted. In first and second grade Johnny performed below grade in reading and math reasoning. In the third grade, Johnny continues to demonstrate significant weaknesses in his decoding skills, sight vocabulary, and written expression. His current reading level is 9. His third grade teacher notes that he lacks control of verbal impulsivity, but is motivated and works hard. The reading specialist reported that Johnny has difficulty with word retrieval and verbal fluency. He has been receiving small group support in reading.

OBSERVATION/INTERVIEW:

Johnny was observed briefly in his classroom and during small group reading instruction. He was an average size 8 year 8 month old student. He often sits at a separate desk facing away from his peers. During independent work time he was observed sitting still and not doing anything. He occasionally looked around, but did not appear to know what to do. Many of the other students had completed a vocabulary worksheet where they were putting the words in alphabetical order. Johnny had one word written. With a redirection by the teacher he began to copy the next word. During a whole group reading lesson, Johnny was involved and participated actively and enthusiastically in the lesson.

Johnny was cooperative during the testing sessions. He often expressed a desire to return to class and became somewhat restless. He demonstrated more inattention and impulsivity during later testing sessions. He rushed to respond to test items. He wrote with his right hand, using a fisted grip. His grapho-motor control was variable, however he worked efficiently at copying tasks. He was provided frequent breaks. Overall the evaluation results give a good estimate of his abilities on these tasks.

EVALUATION RESULTS:

The Weschler Intelligence Scale for Children-IV (WISC-IV) is composed of ten mandatory and five optional subtests each of which measures a specific area of cognitive ability. These subtests are grouped into four major categories. The Verbal Comprehension scale, requiring oral answer to examiner's questions, provides information about the child's ability to use verbal skills in reasoning and solving problems, and the capacity to learn verbal material. The Perceptual Reasoning scale, based on responses to visual, nonverbal material, provides a measure of nonverbal

reasoning skills and the ability to employ visual images in thinking. The Working Memory scale involves simultaneous holding and manipulation of information. On the Processing Speed scale the ability to process visual material efficiently is evaluated. Interpretation of test results should be conducted with the understanding that performance on measures of cognitive ability reflects only a portion of what comprises intelligence.

Wechsler Intelligence Scale for Children-IV (WISC-IV)

On the WISC-IV, Johnny earned average to superior range scores. He obtained an average range score on the Verbal Comprehension Index and a superior range score on the Perceptual Reasoning Index. He performed within the average range on the Working Memory Index and within the superior range on the Processing Speed Index. His Full Scale score fell within the high average range, however it is important to note that his Full Scale score does not adequately represent the range of his abilities. Johnny's individual subtest scores ranged from low average too superior. Johnny's index and subtest scores on the WISC-IV are as follows:

	IQ/Index	**Percentile**	**Confidence Interval (95%)**
Full Scale	111	77th	106-116
Verbal Comprehension	96	39th	89-103
Perceptual reasoning	123	94th	114-129
Working Memory	94	34th	87-102
Processing Speed	123	94th	111-129

Verbal Comprehension	**Scaled Scores**	**Working Memory**	**Scaled Scores**
Similarities	8	Digit Span	7
Vocabulary	9	Letter/Number Seq.	11
Comprehension	11		

Perceptual Reasoning	**Scaled Scores**	**Processing Speed**	**Scaled Scores**
Block Design	12	Coding	14
Picture Concepts	13	Symbol Search	14
Matrix Reasoning	16		

Johnny demonstrated evenly developed abilities on the Verbal Comprehension Index, with scores consistently in the average range. His vocabulary knowledge and comprehension of abstract verbal concepts are appropriate for his age. He exhibited well-developed understanding of social concepts. He used age appropriate vocabulary and expressed himself adequately when responding to verbal inquiry.

On the perceptual Reasoning Index, Johnny demonstrated primarily above average functioning. Johnny exhibited a significant strength in nonverbal problem solving, earning a superior range score on a matrix-reasoning task. This subtest is considered a reliable estimate of general intellectual ability. Johnny's superior performance suggests potentially above average cognitive abilities.

Johnny demonstrated average abilities on the Working Memory Index. He earned scores within the low average-to-average ranges on subtests involving short-term memory for rote verbal information and the ability to recall and mentally manipulate symbols. Johnny was able to focus and sustain attention during these brief tasks.

Johnny demonstrated superior abilities on the Processing Speed Index. He earned a superior score on a timed, grapho-motor coding task, working efficiently with minimal distractibility. He also performed within the superior range on a visual scanning and discrimination task.

Additional information about Johnny's ability to recall and learn verbal and visual information was obtained from administration of selected subtests of the Wide Range Assessment of Memory and Learning.

Wide Range Assessment of Memory and Learning (WRAML)

Subtests	**Scaled/Standard Score**
Visual	
Picture Memory	11/average
Design Memory	11/average
Verbal	
Story Memory	7/low average
Learning	
Verbal Learning	12/average

Data from the WRAML suggest an even profile of abilities in the areas of memory and learning. Johnny demonstrated average range ability to recall visual information. He earned average scores on subtests involving memory for realistic and abstract visual details. He exhibited average ability on a verbal learning task, successfully learning a word list over a series of trials. He had more difficulty on a story memory subtest, performing within the low average range. Johnny had extreme difficulty recalling verbal information presented in context when required to produce the information spontaneously. A highly variable attention span may have also contributed to Johnny's difficulty with story recall.

The Phonological Processing subtest of the NEPSY (Developmental Neuropsychological Assessment) was administered to provide information about Johnny's ability to discriminate, isolate and manipulate individual letter sounds and syllables. Johnny earned an average range score on the subtest. He was able to discriminate and manipulate sounds as expected for his age. His performance was better than expected, in comparison with classroom observation of difficulties with letter-sound relationships.

Bender Gestalt Test of Visual Integration

VISUAL MOTOR

Johnny performed significantly below the average range on the Bender Gestalt Test of Visual Integration. Data suggested an uneven grapho-motor control and extreme difficulty with integration of patterns and with execution of angles. Johnny earned an age equivalent of 5 ½ years on the Bender. His poor performance is in striking contrast to his strong ability to organize abstract visual patterns using blocks.

ATTENTION/ORGANIZATION

Additional information was provided by Johnny's parents and classroom teacher using the Behavior Assessment System for Children (BASC). The BASC reports on a variety of emotional and behavioral indicators. On the BASC a score within the "Clinically Significant" range suggests that the child has the probability of a high level of maladjustment that requires formal treatment. A rating within the "At-risk" range suggests that there is the potential for developing a problem and that behavior probably requires careful monitoring. The teacher ratings on the Behavioral Symptoms Index, for Johnny fell within the "At-risk" range. Johnny received Clinically significant ratings on the Anxiety and Adaptability scales. He was found to often display fear and express self-doubt before a test. He appears to worry a lot about pleasing the teachers and making mistakes. Johnny was rated as resistant to changes in routine. Additional ratings within the "At-risk" range were found on the following scales: Attention Problems, Learning Problems, and Leadership Skills.

The scale completed by the parents yielded an overall Behavioral Systems Index within the average range. There was a significant rating on the Attention Problem scale. Johnny is described as forgetful and easily distracted in the home environment. He does not complete his homework without numerous breaks and coaxing. An "At-risk" rating was found on the Atipicality Scale. Johnny frequently picks at his clothing and nails, and often appears to be daydreaming. Parents indicated that they would be pursuing formal medical treatment from Johnny's health care provider.

SUMMARY:

Results of the cognitive testing with the WISC-IV are indicative of scattered functioning, with average range performance on tasks requiring verbal knowledge and concepts and superior performance on tasks involving nonverbal reasoning. Johnny exhibited age appropriate verbal knowledge and concepts. Difficulties were noted in short-term auditory memory and in recall for verbal information presented in context and in visual motor integration skills. Johnny's BASC profile is indicative of a student with Attention Deficit Hyperactivity Disorder, inattentive type.

This report will be submitted to the multidisciplinary team at Blue Elementary School to assist in determining if Johnny has a disabling condition that requires specialized programming and services.

Division of Programs and Services
Department of Special Education
Office of Instruction and Program Development
XXXXXXXXXX XXXXXX PUBLIC SCHOOLS
Report of Speech/Language Assessment

Student Name: Johnny X
Student ID: 000001
Grade: 3.6
Age: 8.8
Gender: Male
Primary Language: English
Date of Birth: July 14, 1997

School: Blue Elementary
Referral Date: 11/16/05
Evaluation Date(s): 12/21/05; 1/04/06

Date of Report: February, 2006
Parent/Guardian:
Address:
Phone Number(s):

PURPOSE OF ASSESSMENT:
The purpose of this assessment is to determine if Johnny has a speech-language impairment and by reason thereof needs special education.

REASON FOR REFERRAL:
The recommendation for a speech-language assessment was made at an IEP team screening meeting on 11/16/05. Speech-language concerns reflected in the referral and screening information included following verbal directions, listening comprehension (relative to vocabulary and topic), auditory memory, and retrieval of words/information.

BACKGROUND INFORMATION:
No significant problems reported about Johnny's speech-language development. He achieved developmental milestones within expected age range. His speech developed in a bilingual environment, Creole/English. His first words were Creole, but he speaks more English than Creole as verified by the IPT testing results. Family history is positive for learning disabilities. Johnny did attend headstart at Regular Elementary School. He has attended Blue Elementary for kindergarten thru third grade. During kindergarten, Johnny had difficulty with sight words, letter-sound relationships, and phonemic awareness. Problems with attention were also noted. In first and second grade Johnny performed below grade in reading and math reasoning. In the third grade, Johnny continues to demonstrate significant weaknesses in his decoding skills, sight vocabulary, and written expression. His current reading level is 9. His third grade teacher notes that he lacks control of verbal impulsivity, but is motivated and works hard. The reading specialist reported that Johnny has difficulty with word retrieval and verbal fluency. He has been receiving small group support in reading.

There is no previous speech-language assessment. He passed in-school hearing screening in January 2003. Psychological and Educational assessments have been conducted. Results from psychological report above average nonverbal skills, average verbal skills, digit span in low average, weaknesses in memory of verbal information presented in context. Exhibits behaviors indicative of ADHD, inattentive type.

ASSESSMENT TECHNIQUES UTILIZED:

Student Interview
Classroom Observation
Review of Cumulative Folder
Informal Assessment Procedures:
- Verbal analogies
- Categorical Grouping
- Naming Objects from Memory
- Describing Verb Cards
- Rote Sequencing
- Auditory Skills
- Listening Comprehension
- Sequencing

Standardized Assessment procedure:
- Expressive Vocabulary Test
- The Listening Test
- Token Test for Children-R
- Test of Language Development
- Language Processing Test-R

EVALUATION RESULTS:

Johnny was very cooperative throughout the testing sessions, however he was minimally distracted during testing items that did not include pictures. With repeated prompts he was able to comply with verbal requests for short periods of time. A few instances he reported forgetting what to do. He would use the self-help strategy of reverbalizing to assist in auditory recall.

Expressive Vocabulary Test (EVT)
The student must name a picture or state a synonym for a stimulus word and picture provided by the examiner in order to demonstrate ability to express an idea with a single word. Mean = 100, Standard Deviation = 15. Compared to age expectations, Johnny single word expressive vocabulary is within expectancy range.

Standard Score: 96
Confidence Range 90%: 87 to 106

The Listenting Test

The student responds orally to questions about orally presented information to demonstrate ability to listen for classroom purposes. Mean = 100, Standard Deviation = 15. Due to concerns with Johnny's auditory recall, the Details subtest was administered. Compared to age expectations, Johnny's ability to listen to short oral narratives and recall details would be average.

Standard Score: 100
Confidence Range 90%: 87-106

Token Test for Children-Revised

The student is asked to demonstrate ability to follow oral directions of increasing length and linguistic complexity by pointing to and rearranging colored shapes. Mean = 500, Standard deviation = 5. (Average scores range from 495-505). Compared to age and grade expectations, auditory memory for following directions of increasing length and linguistic complexity is within the range of average.

Subtest	Age Expectancy	Grade Expectancy
Part I	501	500
Part II	496	496
Part III	497	493
Part IV	497	496
Part V	499	499
Overall Score	497	496

Test of Language Development – P:2

This test is designed to measure of receptive and expressive language skills in comprehension of single word vocabulary, providing word definitions, comprehension of sentence meanings, repeating sentences, use of grammar, discriminating differences in speech sounds, and articulation skills. Mean = 100, Standard Deviation = 15; subtest mean = 10, standard deviation = 3. Compared to age expectations Johnny's performance was within expectancy range. Strengths were noted in receptive and expressive vocabulary, syntax and receptive grammar. Weaknesses were noted in expressive grammar. Errors in expressive grammar are commonly present in students who have learned English as a second language.

Subtest	**Standard Score**
Picture Vocabulary (PV)	10
Oral Vocabulary (OV)	11
Grammatic Understanding (GU)	11
Sentence Imitation (SI)	8
Grammatic Completion (GC)	6
Word Discrimination (WD)	9
Word Articulation (WA)	7
Cluster	**Standard Score**
Listening (PV,GU)	100

Speaking (OV, SI, GC)	87
Semantics (PV, OV)	103
Phonology (WD, WA)	88
Spoken Language Quotient	**92**

Language Processing Test-Revised

In this test administration, Johnny answered questions to show ability to use language to make word associations, identify members of a given category, explain how noun pairs are similar and different, and describe attributes of given nouns. Mean = 100, Standard Deviation = 15. Additionally, due to concerns regarding retrieval of information from memory, the Categorization subtest was administered. Johnny's performance fell within the expectancy range. While, Johnny's responses were age level appropriate, he did display difficulty retrieving words. Pragmatic skills are judged to be appropriate.

Standard Score of 104

SUMMARY

Assessment data was analyzed in conjunction with District approved Speech-Language Severity Rating Scale. Johnny received scores in within the range of average for his age, on all formal measures that were given. Assessment results are not consistent with a diagnosis of a speech-language impairment. Analysis of informal data indicates borderline to low average ability in the areas of word retrieval, rote sequencing and verbal formulation (expressive grammar).

Given the pattern of strengths and weaknesses for this student, the following instructional accommodations may be appropriate in all settings.

Call the student's name or otherwise focus attention before giving content.
Demonstrate, model, and use gestures when giving directions or explaining content.
Have the student repeat or paraphrase directions before acting on them
Present information and directions orally and visually
Adjust language to the student's comprehension level
Present information in small sequential segments
Emphasize key points of direction or instruction with tone of voice, written reminder or summary
Pair student with partners to support following directions
Allow additional wait time for oral responses.

This report will be submitted to the multidisciplinary team at Eye B. Referring Elementary School to assist in determining if Johnny has a disabling condition that requires specialized programming and services.

K. U. Speeks, M.A.
Speech-Language Pathologist, CCC-SLP

EDUCATIONAL ASSESSMENT REPORT

BLUE ELEMENTARY SCHOOL
123 RED STREET
SILVER SPRING, MD 70000

Student Name: Johnny X
Student ID: 000001
Grade: 3.6
Age: 8.8
Gender: Male
Primary Language: English
Date of Birth: July 14, 1997

School: Blue Elementary
Referral Date: 11/16/05
Evaluation Date(s): 12/21/05; 1/04/06
Date of Report: February, 2006
Parent/Guardian:
Address:
Phone Number(s):

PURPOSE:

This assessment is being conducted as a part of the legally mandated process to be followed when determining whether or not a student is educationally disabled and eligible for special education services.

The assessment information included in this report contributes to the initial identification process of Johnny X. Authorization for assessment was given by both his parents on November 16, 2005.

REASON FOR REFERRAL:

Johnny was referred for a screening IEP meeting due to concerns about his present level of performance in all academic areas as well as difficulty with auditory and visual memory retrieval.

EDUCATIONAL BACKGROUND INFORMATION:

Upon review of his educational records, Johnny has consistently experienced difficulty with decoding, reading comprehension, written language, retrieval of grade level sight words, and attention to task. He is often unable to work independently and requires a lot of small group and one on one instructional situations in order to maximize academic success. His 1st quarter 2nd grade report indicates he was below grade level in the academic areas of reading and math. During the past two grading quarters of this school year Johnny has received many accommodations including but not limited to peer tutoring, modifications in pacing of instruction, in class small group instruction, and an

adjusted work load. He continues to show minimal progress and is currently reading at a level 6.

DATA SOURCES:
Observation
Teacher Reports
Woodcock Johnson III-Revised

OBSERVATION:
An observation is required when determining a disability to provide information regarding the effect of the disability on the student's academic performance. A copy of this observation is attached to the report.

TESTING BEHAVIORS:
Johnny was seen on two different sessions for educational testing. He did not display any apprehension concerning the testing situation and was cooperative. He was able to focus on the specific tasks he was asked to complete. However, during any portion of the test where he had to generate a complete thought in writing, he was extremely reluctant to complete as many as was possible for that given set of time. I often had to prompt him to continue. Additionally, he would not attempt to give answers for questions he perceived to be difficult. Given these observations, the examiner believes that the results indicated below appear to be a valid assessment of Johnny's current educational achievement in conjunction with the documented difficulties he experiences in a learning environment.

ASSESSMENT INFORMATION AND ANALYSIS:

FORMAL ASSESSMENTS:

WOODCOCK-JOHNSON III PSYCHO-EDUCATIONAL BATTERY:

The Woodcock-Johnson III is an individually administered achievement test that measures a student's academic performance in relation to his/her peer group based on age and/or grade (note: MCPS utilizes only age-based standard scores). Each subtest cluster is composed of subtests that provide diagnostic information and give insight into a student's strengths and needs in reading, writing, mathematics, and general knowledge. The Woodcock-Johnson III offers a standard battery and a supplemental battery of tests. The skills cluster is an effective tool to use with younger students as it offers a standard score reflecting a student's acquisition of early academic information. Johnny's scores are as follows:

Test	Standard Score	Percentile
Total Achievement	84	14

Broad Reading	76	5
Broad Math	103	57
Broad Written Language	88	21
Math Calculation Skills	96	39
Math Reasoning	105	62
Written Expression	90	25
Academic Skills	88	20
Academic Fluency	76	5
Academic Applications	94	34
Academic Knowledge	94	34
Letter-Word Identification	86	17
Reading Fluency	no standard score given	
Calculation	96	39
Math Fluency	95	38
Spelling	89	24
Writing Fluency	92	31
Passage Comprehension	83	14
Applied Problems	111	77
Writing Samples	92	29
Quantitative Concepts	98	45
Academic Knowledge	94	34
Punctuation & Capitals	100	49

When compared to others at his age level, Johnny's academic knowledge and skills are within the low average range. His fluency with academic tasks is low. His academic knowledge and ability to apply academic skills are both within the average range.

Johnny's performance is average in math calculation skills and math reasoning; low average in written language and written expression; and low average in reading.

On the Broad Reading subtests, Johnny could identify most sight words on a second grade level (2.6). During the Reading Fluency test he needed extra time to process the questions he had to respond to (1.8). On the Passage Comprehension subtest, Johnny was able to use the context clues to respond correctly to the task. However, once his vocabulary level has been surpassed he had difficulty generating correct responses (1.8).

On the Broad Math subtests, Johnny was able to complete basic addition, subtraction and a few multiplication problems. However, he did have difficulty with subtraction without regrouping. On the Applied Problems and Quantitative

Concepts subtests, Johnny was able to identifying coins, counting by 2's, and identifying numbers in a series. However, he had difficulty with concepts such as decimal and abbreviations for measurements. While Johnny is developing some math reasoning skills, problem solving appeared difficult for him.

On the Broad Written Language subtests, Johnny was able to spell most words on a first grade level (1.8). While he was able to generate sentences that expressed a complete thought using given vocabulary and described a visual cue, capitalization and punctuation are extremely difficult for him.

On the Academic Knowledge subtests, Johnny has a good deal of background knowledge in the areas of science, social studies, and the humanities.

VALIDITY STATEMENT:

The Woodcock-Johnson III Psycho-Educational Battery is judged to be an appropriate measure for use with Johnny. The characteristics (cultural/linguistic) of the students are appropriately represented in the normative sample. The publisher's document adequate validity of the tests and the items are judged to represent significant overlap between content and MCPS curriculum. Johnny's test performance was considered to be an accurate reflection of his aptitude and/or achievement.

SUMMARY AND RECOMMENDATIONS:

Johnny is an energetic and caring eight-year old student who appears eager to learn. His overall achievement is considered below age expectancy with the exception of his background knowledge. Given the pattern of strengths and needs for Johnny the following instructional accommodations may be appropriate in all settings.

- *Small group instruction in all academic areas*
- *Teacher modeled responses both orally and in writing*
- *Repetition of directions*
- *Proximity control (reminders to focus)*
- *Extra time to complete tasks*
- *Use of multisensory techniques to teach basic math facts*
- *Use of thought organizers to plan for writing activities*
- *Word bank, access to a mechanical checker*

Under the guidelines of the Individuals and Disabilities Act (IDEA), Amendments of 1997, PL105-17, formerly the Individuals with Disabilities Act (IDEA) PL-104-476, and COMAR – Code of Maryland Regulations, 13A.05.01, the determination/confirmation of a disability must be made by a committee of qualified professionals and the parents/guardians of the student at an IEP team meeting. Additionally, information, which addresses the effects of the disability on school achievement and performance, must be documents. If the team and

the parents confirm the existence of an educational disability, they will then determine whether Johnny needs special education and related services.

_____
M. V. Gavins, M.S.
Resource Teacher,
Blue Elementary School

Attachments:
Classroom Observation
Woodcock-Johnson III Test Descriptions

Copy to:
Confidential file/Parent/Guardian
Field/Central office

IEP Scoring Rubric Participant #_____ pg. 1 of 2

Technical Adequacy

I. Annual Goal

1. Does the annual goal address the content area?

(0) not there at all
(1) evident but not specific
(2) clearly addressed

2. Is there a focus on a specific instructional level?

Yes **No**

3. Is the specified instructional level appropriate to the student's present level of performance?

Yes **No**

II. Benchmark

1. Does the benchmark contain an appropriate antecedent?

(0) not there at all
(1) evident but not appropriate
(2) clearly addressed

2. Does the benchmark contain an appropriately stated behavior using observable terms?

(0) not there at all
(1) evident but not appropriate
(2) clearly addressed

3. Does the benchmark contain appropriately stated criterion of mastery and methods of evaluation?

(0) not there at all
(1) evident but not appropriate
(2) clearly addressed

Instructional Relevance

I. Annual Goal

1. To what degree does the annual goal reflect the students indicated area of need?

(0) not at all
(1) evident but not specific
(2) clearly addressed

II. Benchmark

1. To what degree are the benchmarks observable subskills of the annual goal?

(0) not a subskill
(1) minimal evidence
(2) generally represents a subskill of the goal
(3) clearly represents a subskill of the goal

2. To what degree are the benchmarks sequentially ordered?

(0) not sequentially ordered
(1) less than half are sequential
(2) half or more are sequential
(3) all are sequentially ordered

3. Does each benchmark measure only one skill?

Yes **No**

4. Does each benchmark reflect general education curriculum standards?

(0) does not reflect general education curriculum standards
(1) reflects general education curriculum standards by reference number only
(2) language reflects the general education curriculum standard
(3) reflects the general education curriculum by reference number and language

Appendix H

Follow Up Interview Questions

1. How many special education students do you service presently?

2. Are you responsible for developing the instructional goals and objectives for all students on your caseload?

3. How many years experience in writing goals and objectives do you have? Does your experience include just resource, self-contained or both types of delivery service models?

3. When you develop instructional goals and objectives what sources of information do you use the most?

4. How do you use the goals and objectives in the development of your weekly instructional plans?

5. What strategies do you use to provide continuity between the actual goals and objectives and daily lessons?

6. To what degree do you think IEP goals and objectives are significant in the learning of students with disabilities? Explain why.

   (0) Not at all
   (1) Somewhat significant
   (2) I don't feel strongly one way or the other
   (3) Significant
   (4) Very Significant

7. How was the think aloud task different from when you actually develop an IEP for a student?

8. What materials did you find most useful during the task and why?

9. Did you use the assessment reports? How difficult is it for you to interpret the data from the reports?

10. Were there additional materials that you needed but were not provided?

11. What motivates you to write procedurally correct and instructionally relevant IEP goals and objectives?

Appendix I

Verbal Protocol Observation Form Participant ID#:

Pre-Task Questionnaire *Start:_____ End:_____ Total Time:_____*

Comments:_____

_____

_____

Practice Think Aloud Activity #1 *Start:_____ End:_____ Total Time:_____*

Comments:_____

_____

_____

Practice Think Aloud Activity #2 *Start:_____ End:_____ Total Time:_____*

Comments:_____

_____

_____

____ _____

Think Aloud Protocol *Start:_____ End:_____ Total Time:_____*

Student Vignette (Orange):

Psychological Report (Yellow):

Speech/Language (Green):

Educational (Pink):

IEP PLOP (Blue):

Curriculum Guide (White):

Order of Use: 1st 2nd 3rd 4th 5th 6th

Comments:_____

_____

Appendix J

Alignment Checklist

Participant ID#:_____

MDL Components	Acclimation	Competence	Proficiency
Knowledge # KnoACC codes ___ # KnoCOMP codes ___ # KnoPROF codes ___	Rdg ProEx	Rdg1 TD	PKAct Gidea
Strategic Processes # StraACC codes ___ # StraCOMP codes ___ # StraPROF codes ___	Verbals Stratid Rdga RRrev	SelfQ-L Monconis Rdgc ActRev	SelfQ-H Monconin Rdgp Evlc PotRev
Interest # InACC codes ___ # InCOMP codes ___ # InPROF codes ___	Job	Prfdev Adv	Fedreg Edu

Notes:_____

_____

_____

_____

_____

_____

_____

_____

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